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January 8, 1931

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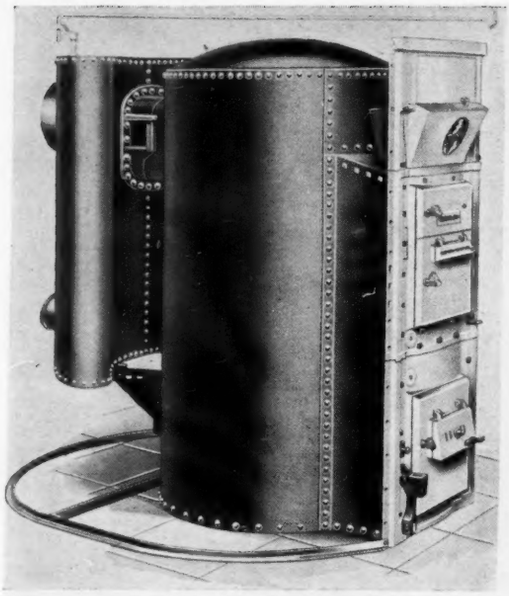

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Volume 88 Number 2

STEEL

For forty-eight years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

This Week in Steel

WHEN congress voted to return the railroads to private operation it also laid down the principle that their consolidation into a few strong systems would be desirable. A decade of negotiations has elapsed and finally, under the aegis of President Hoover, the carriers serving that dense traffic area bounded by New York, Norfolk, St. Louis and Chicago have agreed to pool their properties in four great groups. . . . For the railroads this merger—assuming the interstate commerce commission assents—is quite the outstanding development since the war. It should lend strength to the weaker roads, enable all lines the better to meet the new competition, and materially enhance the investment position of their securities. For the President, the merger represents the consummation of an end consistently sought. And for steel, it concentrates buying power to the highest degree in history. . . . Although the affected carriers operate only 20 per cent of the country's mileage they utilize 40 per cent of all locomotives, 48 per cent of freight and 38 per cent of passenger equipment. Considering all factors, they constitute 37 per cent of the nation's railroad plant. Four men —one in Philadelphia, a second in New York, a third in Baltimore and the fourth probably in Cleveland—will be the supreme court in the purchase of almost 40 per cent of all the locomotives, freight and passenger cars, track material, incidental iron and steel requirements—these last alone approximating $160,000,000 a year—of the railroads of the United States (Page 15).

By Its Enemies Shall It Be Known

For radical members of the senate the merger has aroused the customary antagonism to anything the President proposes. Brookhart, Couzens et al promptly appraise the merger as a benefit to finance and inimical to the consumer. The interstate commerce commission is the final arbiter, yet the influence of the opposition in the senate chamber and the potentialities of legislation are powerful. It has been charged in the senate that maintenance of a $43 price for rails for almost ten years has proved hurtful to the railroads and beneficial to steelmakers, yet the fact is the carriers have derived the benefits of a stable market without incurring any financial hazard. In this decade of $43 rails the mills, for example, have rebuilt their equipment for the 39-foot lengths, without imposing any extras. A strong defense for steel is easy (Pages 16 and 30).

Anyway, It Requires Men to Take a Census

When congress last month passed the President's unemployment bills it disposed of major proposals, save the insistence Senator Wagner places upon his measures looking to unemployment insurance. With 11 supply bills to be passed before March 4, little further action is probable. . . . The department of labor, however, starts Jan. 15 on its second census of un-

Wide-World Photos

Roadway of the new Hudson river suspension bridge at New York, looking west toward the New Jersey side.

employment in 20 "key" cities (Page 18). . . . The national industrial conference board warns against being too altruistic in relief efforts (Page 18). . . . A large Canadian steel interest is reducing its workday to 10 and 8 hours, raising hourly rates to compensate (Page 18). . . . Union sheet, tin plate and bar mill workers whose rates are based upon market prices are taking further reductions (Page 18).

December Lays a Wreath on 1930

Statistics on production of pig iron and steel ingots in December provide one more reason for not lamenting the passing of 1930. . . . Last month the daily rate of output at the blast furnaces declined 13.6 per cent, to 53,730 gross tons, or the lowest monthly rate since January, 1922. For the entire month, December's output of 1,665,630 tons was 10.7 per cent below November. Relating production to capacity, December was only a 38 per cent month. As the year ended, only 96 of the country's 310 blast furnaces were active. And the 1930 total of 31,441,403 tons of pig iron was 10,800,000 tons short of 1929 and 6,000,000 tons below 1928 (Page 23). . . . British pig iron producers to stimulate waning production are offering rebates to buyers who agree to use British pig iron exclusively (Page 80). . . . A motion for a new trial of the Bethlehem-Sheet & Tube merger case is overruled. The case now can be appealed on allegation of error (Page 19).

Seasonal Gains, if No Other, Loom

On New Year day steelmakers everywhere turned over a new leaf. As yet the entries on it are few, but market prospects are unmistakably brighter even if they do not exceed the proportions of the usual first quarter improvement (Page 57). . . . Detroit is convinced January output of passenger cars will exceed December, but still anxiously awaits the verdict of the shows (Page 28). Chevrolet and Hudson-Essex are going strong, Ford has prolonged his shutdown to Jan. 12 in most departments, but indicates resumption then with vigor. Talk of a low-priced Ford eight will not down. . . . As Europe opens the new year its entente is reduced to the level of establishing quotas, taking October, 1929, as the base and slicing off 30 per cent for the first quarter rate (Page 19). . . . Germany with customary thoroughness has dissected her steel industry and concluded that only the shutdown of high-cost works will ease the situation for the remainder (Page 81).

Someone Is Always Talking Manganese

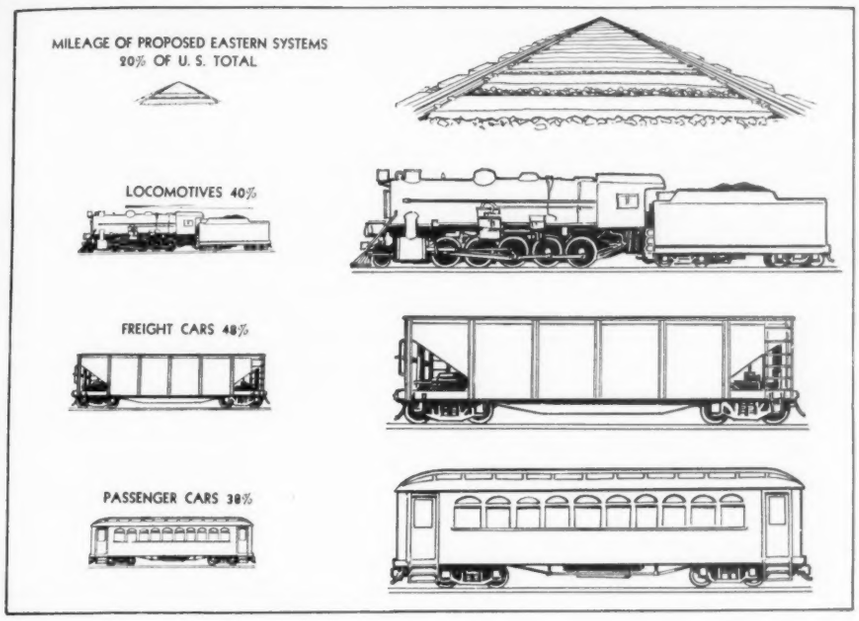
Domestic producers of manganese ore and steelworks consumers of foreign ore have observed the holiday amenities and foregone further passes over the Russian situation, but the government has put the fat in the fire again with a statement that in 1929 the consumption of foreign manganese in the United States was 22 times the use of home ore (Page 29). Only in ferruginous manganese has the domestic industry the edge. . . . Despite much talk of Russian dumping, which a measure introduced in the house by a congressman from South Dakota would prohibit, imports of iron and steel for 11 months of 1930 totaled only 492,499 tons, against 691,518 tons in 1929, while exports at 1,883,037 tons were off practically a million tons (Page 21). . . . As if to give the steel industry a mark to shoot at, the census bureau announces (Page 17) that the value of 1929's record output of steel products was $3,500,000,000, or 21 per cent greater than in 1927.

Radios Now Heavy Consumers of Steel

Radio constructors formerly shunned iron and steel because of mysterious tricks they believed the metals played with the circuits. Any manufacturer who would have dared to use steel for important parts three years ago would have invited financial ruin. Now the finest sets use steel for chassis, shields and even variable condensers! The radio industry consumes 110,000 tons of steel annually, considerably more than all the other materials combined. About 56.4 pounds is consumed per set, allowing for scrap loss (Page 44). . . . Rolled down from a 46-ton carbon steel ingot a boiler plate 2⅜ inches thick, 360¾ inches long and 195 inches wide was shipped recently by a Pennsylvania steel company for fabrication into a cross-drum sectional-header boiler. The plate weighs 48,200 pounds; the boiler is to have 2000-horsepower capacity and 650 pounds working pressure (Page 45).

Confident of Larger Ore Demand

Iron ore production seldom drops two years in succession; when there is a cut one year there is generally a recovery in the year following. The rule has failed only once in more than 20 years. Lake Superior mine operators following a reduction of 28 per cent in 1930 are preparing for moderate improvement in 1931 (Page 46). . . . Business starts the new year with few illusions (Page 33). . . . A year ago the general attitude of mind was one of blissful ignorance; today business men are less reluctant to face hard facts. . . . Chromium steels and chrome-nickel steels enter into the production of a large tonnage of castings where resistance to heat and corrosion are sought. The alloying elements cause certain changes in the steel, changes which demand careful attention to melting and casting technique. Avoidance of chromium losses by oxidation is a detail which operators must watch (Page 39).



Eastern Rail Mergers Highly Concentrate Buying Power

CONSOLIDATION of all eastern railroads except the New England group into four great systems, as proposed by the railroads and approved by the President, will bring as one consequence a marked concentration of buying power.

The four proposed systems embrace only 20 per cent of the railroad mileage of the United States, yet, owing to the density of traffic in the East, they possess 40 per cent of all locomotives, 48 per cent of freight and miscellaneous cars, and 38 per cent of all passenger equipment.

In general, it may be said that these eastern carriers represent about 37 per cent of the railroad plant of the country. Thus, four men—one for each system—will have the last word in the purchasing of almost 40 per cent of the total, annual requirements of the railroads for track material, rolling stock and iron and steel.

The four-line merger is built around the Pennsylvania, New York Central, Baltimore & Ohio and Van Sweringen railroads, the latter comprising principally the Chesapeake & Ohio, Nickel Plate and Erie. Details of mileage, equipment ownership and ratios to the entire railroad structure are given in the accompanying table.

The merger carries out the original intent of the transportation act of 1920, which was to group all railroads into a limited number of systems to effect a more equitable division of traffic, permit the absorption of weak roads by stronger ones, and generally strengthen the railroad structure by affording economies in management.

Major, interested carriers and the President support the proposal, to go to the interstate commerce commission in individual petitions. Consent of the commission is necessary to make the plan effective. Originally the commission favored an eastern grouping of five trunk lines. At least one proposal for merging western roads has been disapproved.

Whether the animosity aroused in congress will prove disturbing is conjecture. It is not necessary that the senate act on the merger proposal, yet its sentiment and the potentialities of future legislation can scarcely be ignored. Thus far the opposition seems localized in the senate and to what are usually regarded as independent Republican members. The latter propose that the effective date of the mergers be March 4, 1932.

All official Washington is studying the proposal. So far as service to industry is concerned, it is expected the chief effect will be the newer—and presumably shorter—routings which the enlargement of the trunk lines will make possible. Since most iron and steel freight rates in the East are on a mileage basis, the trend should be for slight reductions.

Centralization of purchasing appears certain, and to what extent the concentration of power affects prices is dependent, of course, upon the policies of the carriers and the attitude of producers. The tendency to standardize should receive impetus, and the engineering and equipment standards of the dominant roads should be applied to the smaller roads absorbed. Already the Van Sweringen lines are adapting engineering standards to all subsidiaries. Heavier rails for smaller roads are likely. Some designs for tie plates and other accessories are expected to be discarded. A concentration of shops and repair work should be an economy within reach.

An analysis of the requirements of the various roads included in the consolidation is difficult owing to the many short lines and the paucity of late statistics, but the following tabulation is from authoritative sources and includes in each of the four systems the major railroads allotted to them:

Pennsylvania—In 1926-30 inclusive purchased 27,297 freight cars, averaging 5459 per year, and 582 locomotives, averaging 116 per year. Normally, this road builds a large proportion of its locomotives and cars. Normal annual rail purchases about 280,000 tons.

New York Central — In 1926-30 awarded 21,513 freight cars, average of 4303 per year, and 527 locomotives, averaging 105 per year. Normal rail order about 213,000 tons.

Van Sweringen system—In 1926-30 purchased 31,306 freight cars, an average of 6261 per year, and 375 locomotives, or 75 per year. Normal rail requirement 175,000 tons.

Baltimore & Ohio—In 1926-30 ordered 25,327 freight cars, an average of 5065 per year, and 54 locomotives, or 11 per year. Normal rail commitment 141,000 tons.

According to the committee on public relations of the eastern railroads,

Equipment Ratio of Eastern Roads High

	Mileage	Equipment Owned: Locomotives	Freight and Miss. cars	Passenger cars
Pennsylvania	16,050	7,576	362,599	7,054
Van Sweringen System	14,160	5,091	247,766	3,722
New York Central	13,294	6,287	291,349	5,677
Baltimore & Ohio	10,323	4,611	207,623	3,855
TOTAL	53,827	23,499	1,109,337	20,308
All U. S. railroads	261,000	57,537	2,274,464	52,259
Per cent eastern group	20	40	48	38

all of the railroads in 1929 purchased iron and steel products valued at $437,840,000. This apparently is exclusive of locomotives and cars purchased as such. On the basis of the four-line merger representing 37 per cent of the railroad plant of the country, the four groups will control the outlay of $160,569,000 per year, based upon 1929. This itemizes as follows:

Steel rail (new and second hand, except scrap)	$34,825,000
Wheels, axles and tires	15,269,000
Frogs, switches, crossings, track fastenings and bolts, spikes, tie plates, rail anchors, etc.	26,259,000
Iron bridges, turn tables, structural steel, bar iron and steel, forgings, fabricated and unfabricated shapes and pressed steel parts	19,812,000
Flues and tubes for locomotive and stationary boilers	2,661,000
Telegraph and telephone, interlocking and signal material	11,424,000
Bolts, nuts, washers, rivets, springs, etc.	7,500,000
Locomotive and car castings, beams, couplers, frames and car roofs	24,881,000
Machinery, boilers, repair parts and all other iron and steel products	18,238,000
Total iron and steel products	$160,569,000

STEEL's annual analysis of steel consumption discloses that in 1930 the railroads accounted for 16.95 per cent of all finished rolled steel products. Applying this percentage to the estimated 1930 total of finished rolled steel, the railroads last year consumed 4,862,369 tons of steel products.

On the basis of the eastern roads being 37 per cent of the total, an estimate of annual steel requirements of these groups, which would be low because of the sharp decline in production in 1930, is as follows:

Product	Gross tons
Angle bars, steel ties and other track accessories	261,977
Plates	276,792
Structural shapes	186,627
Bars and shapes under 3-inch except concrete bars	130,519
Concrete bars	9,052
Hoops, bands and cotton ties	5,972
All black plate and sheets except black plate for tinning, and excepting galvanized sheets	39,404
Galvanized sheets	16,740
Strip steel	3,451
Wire products	25,446
Tubing and pipe	12,901
All other finished steel products	67,743

As submitted to the interstate commerce commission and not listing all of the short lines, the components of the four proposed systems are:

Pennsylvania—Wabash, Norfolk & Western, Detroit, Toledo & Ironton, one half the Virginian.

New York Central—All New York Central lines and the Lackawanna.

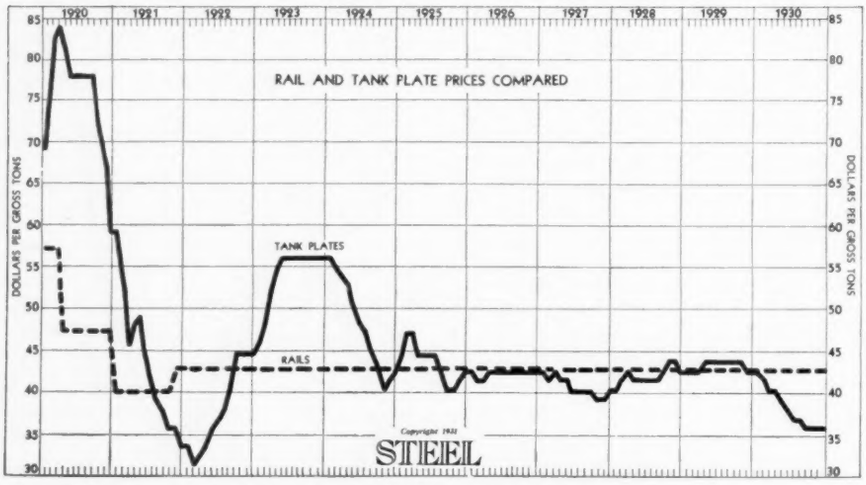
Van Sweringen system—Chesapeake & Ohio, Nickel Plate, Erie, Pere Marquette, Hocking Valley, Wheeling & Lake Erie, Lehigh Valley, Pittsburgh & West Virginia, Bessemer & Lake Erie, Chicago & Eastern Illinois, and half the Virginian.

Baltimore & Ohio—Reading, Central of New Jersey, Chicago & Alton, Buffalo, Rochester & Pittsburgh, Lehigh & Hudson River, and Pittsburgh, Buffalo & Susquehanna.

At this time the senior purchasing official of the New York Central is W. C. Bower, vice president in charge of purchases and stores, New York; of the Pennsylvania, M. C. Kennedy, vice president in charge of purchases, stores and insurance, Philadelphia; and of the Baltimore & Ohio, W. S. Galloway, purchasing agent, Baltimore.

Because the Van Sweringen system comprises such major lines as the Chesapeake & Ohio, Erie and Nickel Plate, the comparable official for this group cannot now be named.

The Bessemer & Lake Erie railroad, owned by the United States Steel Corp. and connecting its Pittsburgh district mills with Lake Erie, is awarded to the Van Sweringen system. Concerning the Elgin, Joliet & Eastern, the Corporation's railroad in the Chicago district, no announcement has been made.



According to Senator Couzens, of Michigan, had steel rails been reduced recently as much as other steel products instead of being pegged at $43, mill, the railroads would be benefitting about $18,000,000 a year. He charges collusion between the railroads and the steel industry. He forgets, however, the times when comparable steel products were priced higher than rails. The above comparison between standard open-hearth rails at the mill and tank plates at Pittsburgh, both in gross tons, indicates it is about an even break

The Business Week in Washington

CONGRESS convened Monday, Jan. 5, following its holiday recess. The 71st session is now in its final spurt, as it expires by law at midnight, March 4.

□ □ □

Interstate commerce commission will shortly begin consideration of proposal of all eastern railroads, except those in New England, to merge into four systems. President Hoover favors the plan. Much opposition to it has been expressed in the senate.

□ □ □

Commissioner C. W. Hunt of the federal trade commission became chairman Jan. 1, succeeding G. S. Ferguson Jr. Mr. Hunt was named under the commission's rotation policy which provides that commissioners shall serve as chairman for one year in the order of their seniority.

□ □ □

Comptroller of the Currency John W. Poole in his annual report to congress recommends that national banks be allowed to establish branch banks within their regional trade areas under certain conditions.

□ □ □

Col. Arthur Woods, chairman of the President's employment committee, has announced that the way has now been cleared for starting the expenditure of more than $800,000,000 for public construction work.

□ □ □

Officials of the weather bureau, department of agriculture, have come out strongly in favor of the 13-month calendar. In some parts of their work, it is stated, experts of the bureau have had to work on the thirteen month basis for a long time.

□ □ □

A bill introduced by Representative Williams, of South Dakota,

would place an embargo on imports of manganese and other products from Russia.

Financial News of Steel Industry

PITTSBURGH Steel Co., Pittsburgh, has omitted common dividend due at this time. Three months ago company paid dividend of 50 cents a share, prior to which the stock was on a $4 annual basis. Regular quarterly dividend of $1.75 on preferred was declared, payable March 1 to record Feb. 7.

□ □ □

Lamson & Sessions Co., Cleveland, has omitted quarterly dividend of 50 cents on the common due at this time.

□ □ □

Final terms of exchange of stock by which National Steel Corp., Pittsburgh, will acquire Michigan Steel Corp., Detroit, place the record date for exchange at Jan. 15, an extension from Dec. 22.

□ □ □

Briggs Mfg. Co., Detroit, has declared quarterly dividend of 37½ cents a share and an extra of 12½ cents, payable Jan. 26 to record Jan. 10. Dividends have not been paid since July, 1927.

□ □ □

Dominion Bridge Co., Montreal, Que., for the year ending Oct. 31, 1930, had operating profits of $2,383,813, compared with $2,639,831 for the preceding year. After deduction for depreciation there remained net profit of $1,983,813. Dividends required $1,812,166, leaving surplus of $171,647, which added to the amount brought forward, left total balance of $4,366,504.

□ □ □

Chapman Valve Mfg. Co., Indian Orchard, Me., will submit plan for split-up of stock, four for one, to stockholders in February. Par value will be reduced from $100 to $25 a share, and at the same time $500,000 of new common will be issued. Directors have declared extra dividend of $1 a share in addition to regular quarterly of $2, both of which were paid Jan. 2 to record Dec. 24.

□ □ □

Advance Rumeley Co., LaPorte, Ind., recapitalization plan has been approved by a majority of the stock at the special meeting of stockholders Dec. 24. Plan involves merger with Indiana Farm Machinery Corp., organized as a vehicle of recapitalization. After the merger name will be changed to the Advance Rumeley Corp. Plan would eliminate arrearage of dividend accumulations and $13,000,000 carried as good will.

Census Shows Steel Total Touches High Peak in 1929

A TOTAL of $3,350,574,340 has been reached by the bureau of the census as the value of iron and steel products made in 1929 by manufacturers in the United States classified as steel works and rolling mills. This figure represents the total value at the plant. It compares with $2,776,389,255 in the census of manufactures in 1927, the last preceding census year, an increase of 20.7 per cent.

Total tonnage produced by manufacturers in this classification was 56,158,413 gross tons, compared with 44,756,716 tons in 1927, an increase of 25.5 per cent. In addition, 63,046 tons of steel castings were reported by foundries classified in the foundry and machine shop industry. Steel castings were also produced and consumed in works by establishments classified in other industries, but no data are collected in the biennial census in regard to this tonnage.

Output for sale and interplant transfer of finished rolled and forged products of steel works and rolling mills in 1929 amounted to 30,487,938 tons, valued at $1,600,651,326, compared with 1927 totals of 23,738,478 tons valued at $1,251,788,161. In addition, 9,501,441 tons of finished rolled and forged products were produced and consumed in further manufacture in the same works. The value of further manufactured products made in departments of steel works and rolling mills from finished rolling mill and foundry products was $1,075,323,238. These included tin and terne plate, wire and wire products and her material. In 1927 these items were valued at $983,166,555.

Statistics of this branch of industry for 1929, with comparative figures for 1927 are presented in the accompanying table. In this tabulation manufacturers' profits can not be calculated from the items of wages, cost of materials and total value of products as no data are collected on such items as interest on investments, rent, depreciation, taxes, insurance and advertising and the cost of materials for the two years are not on a comparable basis.

Of the 56,158,413 tons of raw steel produced in 1929, 54,132,740 tons of ingots were produced and consumed in the same works and 663,170 tons were for sale or interplant transfer. Of the direct steel castings 1,207,278 tons were for sale and interplant transfer and only 225 tons were produced and consumed in the same works.

Steel and iron scrap for sale and interplant transfer in 1929 was 2,817,176 tons and in 1927 it was 2,448,224 tons. Cinder and scale for sale and interplant transfer in 1929 was 1,190,861 tons and in 1927 it was 656,551 tons.

Steel Products in 1929 and 1927

	1929	1927	Per cent increase
Number of establishments	485	486	*0.2
Wage earners (average for year)	393,006	361,312	8.8
Wages	$685,115,136	$601,275,499	13.9
Cost of materials, fuel, and purchased electric current	$1,896,635,523	$1,689,655,295	.....
Products, total value	$3,356,894,259	$2,779,840,238	20.8
Steel-works and rolling-mill products	$3,350,574,340	$2,776,389,255	20.7
Other products, value, and receipts for custom work and repairing	$6,319,919	$3,450,983	83.1
Value added by manufacture	$1,460,258,736	$1,090,184,943	.....

*Decrease.

Steel Corporation Common Stock More Widely Held

New York—There were 141,901 holders of United States Steel Corp. common stock at the date of books' closing for the December dividend, compared with 135,504 holders in September, or an increase of 6403 stockholders during the three months. In December, 1929, there were 117,956 holders.

The November preferred dividend went to 59,171 stockholders, against 59,949 in August and 62,238 in November, 1929.

OFFICIALS INSPECT WORCESTER WIRE PLANT

Officials of the United States Steel Corp. and the American Steel & Wire Co. recently visited South Works, Worcester, Mass. In the party shown above, as it started the tour of inspection, from the left, were: Clifford F. Hood, assistant district manager, Steel & Wire company; John F. Tinsley, vice president and general manager, Crompton & Knowles Loom Works, a former superintendent of South Works; D. A. Merriman, vice president and general manager, Steel & Wire company; A. N. Diehl, vice president, Steel corporation; J. A. Coakley, vice president and general traffic manager, Steel & Wire company; C. F. Blackmer, vice president and general superintendent, Steel & Wire company; Eugene P. Thomas, vice president, Steel corporation; John Hulst, vice president, Steel corporation; Myron C. Taylor, chairman of finance committee, Steel corporation; James A. Farrell, president, Steel corporation; John S. Keefe, president, Steel & Wire company; J. Lester Perry, district manager, and Malcolm W. Reed, assistant district manager, Steel & Wire company

Unemployment Insurance Favored by Social Workers

Unemployment insurance, systems of employment exchanges and uniform standards of dismissal procedure were indorsed by the executive committee of the American Association of Social Workers, meeting in Cleveland in conjunction with the American Association for the Advancement of Science, the week of Dec. 29. Several sections and affiliations of the science association discussed labor problems.

While these meetings were in progress the American Association for Labor Legislation held an unemployment conference. Senator R. F. Wagner, New York, who is sponsoring a bill for national unemployment insurance, was the principal speaker.

Conference Board Warns Against Misguided Relief

A tremendous concentration of public and private effort on the task of unemployment relief is revealed by a survey made by the National Industrial Conference board, New York. Industry also is reported coping with the situation by putting in effect many special measures.

A large steel company, for example, has 97 per cent of its normal force on the payroll, despite the fact its operations are only at 48 per cent of capacity. In this case working hours have been reduced and about 10 per cent of the force is engaged in construction work. The board issues a note of warning to the public, saying, "altruistic enthusiasm once aroused has a way of gaining momentum until discrimination is sacrificed to the general urge to help; considerable harm may be done in spite of the most highly commendable intentions."

Sheet, Tin Plate and Bar Mill Wages Lower

Based on selling prices, wages in bar iron, sheet and tin plate mills having contracts with the Amalgamated Association of Iron, Steel and Tin Workers will be lower in January and February than in November and December. Average sales price of Nos. 26, 27 and 28 gage black sheets in the last two months of 1930 was 2.70c per pound. Hence wages in sheet and tin plate mills will be down 1.5 per cent to 16.5 per cent above base. Following is a comparison of price averages:

Nov.-Dec.	2.70c	—1.5 per cent
Sept.-Oct.	2.75c	unchanged
July-Aug.	2.75c	—4.5 per cent
May-June	2.90c	unchanged
March-April	2.90c	—4.5 per cent
Jan.-Feb., 1930	3.05c	unchanged
Nov.-Dec.	3.05c	unchanged
Sept.-Oct.	3.05c	unchanged
July-Aug.	3.05c	unchanged
May-June	3.65c	+1.5 per cent
March-April	3.00c	unchanged
Jan.-Feb., 1929	3.00c	unchanged
Nov.-Dec.	3.00c	unchanged
Sept.-Oct.	3.00c	unchanged
July-Aug.	3.00c	unchanged
May-June	3.00c	unchanged
March-April	3.00c	unchanged
Jan.-Feb., 1928	3.00c	unchanged

The average sales price of bar iron was 1.70c, and puddlers will receive $10.30 a ton, 50 cents a ton less than in the last four months of 1930. Following are price averages by month:

	1930	1929	1928
Jan. Feb.	1.95c	2.00c	1.85c
March-April	1.90c	2.00c	1.90c
May-June	1.90c	2.00c	1.90c
July-Aug.	1.80c	2.00c	1.95c
Sept.-Oct.	1.80c	2.00c	2.00c
Nov.-Dec.	1.70c	2.00c	2.00c
Yearly average	1.841c	2.00c	1.933c

Dominion Company Cuts Hours; Raises Wage Rates

Toronto, Ont.—Beginning Jan. 1 the Dominion Steel & Coal Corp., Sydney, N. S., changed the working hours of the coke oven, blast furnace and open-hearth departments from 13, 12 and 11-hour shifts to 10 and 8-hour shifts. To compensate for the reduction in hours the hourly rates will be increased in accordance with the system adopted by the Steel Co. of Canada, and in line with the rates in the United States.

Unemployment Recount in 20 Cities To Begin Jan. 15

Washington—The unemployment recount in 20 selected cities will begin Jan. 15 and the field work will be completed the end of the month, according to Col. Arthur Woods, chairman of the President's unemployment committee. The bureau of the census will conduct the work with 4500 enumerators.

It is believed this enumeration will further serve as an index of the relation between unemployment and certain key industries, although this is not true of every city to be cov-

ered. Pittsburgh, it is stated, may be studied in terms of steel and Detroit in connection with the automobile industry.

In a statement issued by President Hoover are the following estimates for construction expenditures by the federal government in the calendar year 1931: Aid to highways, $219,922,500; public buildings, $173,869,000; rivers and harbors, $159,857,000; ship construction, $129,920,000; aircraft and air navigation, $30,882,000. Miscellaneous items bring the total to $724,058,000. This compares with a rate of about $275,000,000 per annum prior to the depression. Expenditure for farm relief will total $160,000,000 for the calendar year 1931.

Future Course of Action in Merger Case Uncertain

Following the decision by Judge David G. Jenkins in Youngstown, O., Dec. 29, enjoining the proposed Bethlehem-Sheet & Tube merger officers of the two companies met in New York Dec. 31 when lawyers explained the scope and effect of the injunction. It was formally announced after the meeting "no decisions were reached or sought to be reached" by those present.

A motion for a new trial was filed, however, within three days of the decision, as required by statute if a new trial is desired. The motion was overruled Jan. 6 by Judge Jenkins. The case can now be appealed on allegation of error. Notice of appeal must be filed within 30 days.

A meeting was held in Cleveland Jan. 6 in Mr. Baker's offices attended by several directors and officers of Sheet & Tube, including Mr. Campbell and Mr. Purnell. No officers of Bethlehem were in attendance. No decisions were sought to be arrived at, those at the meeting discussing the present situation as affected by Judge Jenkins' decree.

Judge Jenkins has begun a vacation for an indefinite period, while Newton D. Baker, chief counsel for Sheet & Tube, left Jan. 6 for a trip to Europe.

Decide Rail-Export Rates

Washington—Interstate commerce commission Jan. 6 rendered decision in connection with export and import rates to and from south Atlantic and Gulf ports. Carriers serving south Atlantic and Gulf ports and their connecting lines were granted authority to continue export and import rates on classes and commodities between points in central and western trunk line territories and said ports, "as indicated, without observing the long and short haul clauses of section 4 of the interstate commerce act."

Entente Loses All but Hold on European Steel Quotas

CONTROL of the steel industry of Europe by the entente, which narorwly escaped entire disintegration in 1930, goes into the new year shorn of all powers except that of fixing quotas of production.

The only other international organizations affecting the steel industry are the international railmakers' association and the international wire rod syndicate, which have been working smoothly for several years.

Never since its formation in 1926 had the entente come so near disruption as in the latter part of 1930. At one time it was thought it would not survive Sept. 30. As a first step for its salvation it was provisionally prorogated until Dec. 31, 1930, and at the last meeting of the directing committee, Dec. 6, it was decided that a further extension should be made until June 30, 1931, which would give time to revise the statutes of the organization.

The decision with regard to control of production for the first quarter of 1931 is that the quota shall be fixed on the basis of the actual output of the member-countries during October, 1929.

The quota for the first quarter of 1931 is calculated by reducing the October, 1929, output by 30 per cent, and the figure thus arrived at is not to be exceeded by the members without incurring a penalty. Based on this calculation, and spread over a period of 12 months, the quota of production for the five original member-countries would thus be 25,390,000 metric tons.

This quota can be interpreted by the member-countries in two ways, and each member-country is free to adopt its own interpretation, as follows:

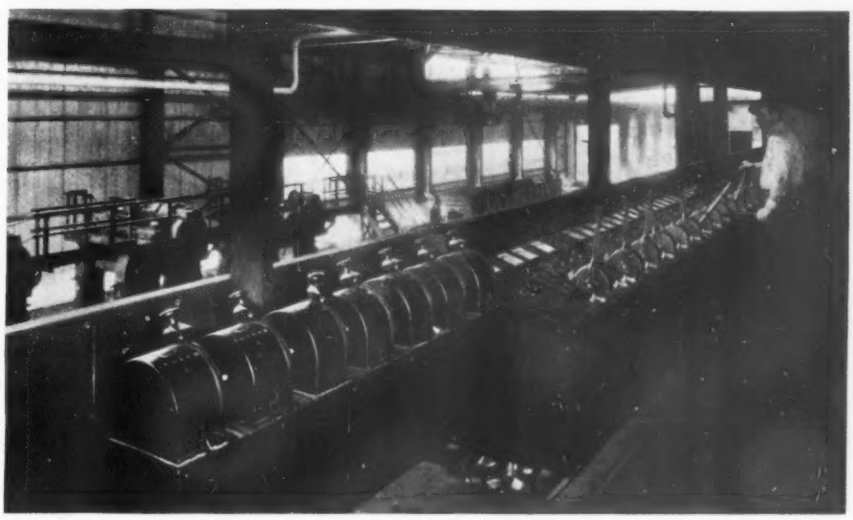
A member-country's quota can be calculated by applying to the above-mentioned figure of 25,390,000 metric tons the percentage basis which was allocated to each country at the time when the entente was formed. Based on the figure arrived at, at present the quotas are: Germany, 40.45 per cent; France, 31.89 per cent; Belgium, 12.57 per cent; Luxemburg, 8.55 per cent; Saar district, 6.54 per cent.

Each member-country can choose to restrict its monthly production to the actual output reached by that country in October, 1929, reduced by 30 per cent.

A modification also has been made in the method of fixing penalties for over-production. It will be remembered that, at the origin of the entente, any country producing more than its quota was to pay a fine of $4 per ton on the excess production.

Already, in the course of time, a concession was made to Germany, in whose case the quota of production was divided into two parts, one applying to domestic trade and the other to export trade. The $4 per ton penalty was applied only to Germany's excess output which was to be sold in the domestic market, and for any excess of output applying to

(*Continued on Page* 79)



THE HAND THAT GRASPS THE CONTROLLER RULES THE STEEL MILL
Scene in the strip mill control pulpit at the new Great Lakes Steel Corp. works at Detroit, which is a subsidiary of the National Steel Corp., Pittsburgh

Builder of Forming Machines To Expand Facilities

Yoder Co., Cleveland, builder of cold-roll forming machines, announces the immediate start on construction of a new building, to enlarge plant facilities at Walworth avenue and West Fifty-fifth street, involving an expenditure of $145,000. The new structure, 100 x 350 feet, will be partly two floors and partly one floor in height, construction being of steel, concrete and brick. Architect and engineer is Wallace Hatch; the general contract has been let to Gilmore-Carmichael-Olson.

Officials of the company state present bookings insure operations for the next four months, from 200 to 225 men now being employed, some on a night shift. Heavy machinery for forming large-diameter steel pipe to be electrically welded, supplied to the Youngstown Sheet & Tube Co., Youngstown, O., has furnished a good share of the Yoder company's business during the past year; additional equipment for this company now is being assembled.

A description of the 2-high continuous forming mill for 26-inch diameter steel pipe, built by the company, was presented on Page 54 of the Aug 14 issue of STEEL.

«Facts Justify Optimism»

E. T. Weir, chairman, National Steel Corp., Pittsburgh, says in a letter to National Steel stockholders:

"In these days we hear a great deal of pessimism with regard to the steel industry. The facts as to our situation; as I view them, justify optimism rather than pessimism, and my own view regarding the steel industry as a whole is that there is no occasion for pessimism.

"The history of the industry, its marvelous development, the greatness and growth of our country, and the constantly increasing uses for steel, all justify an absolute confidence that the industry will in the future far surpass any past record."

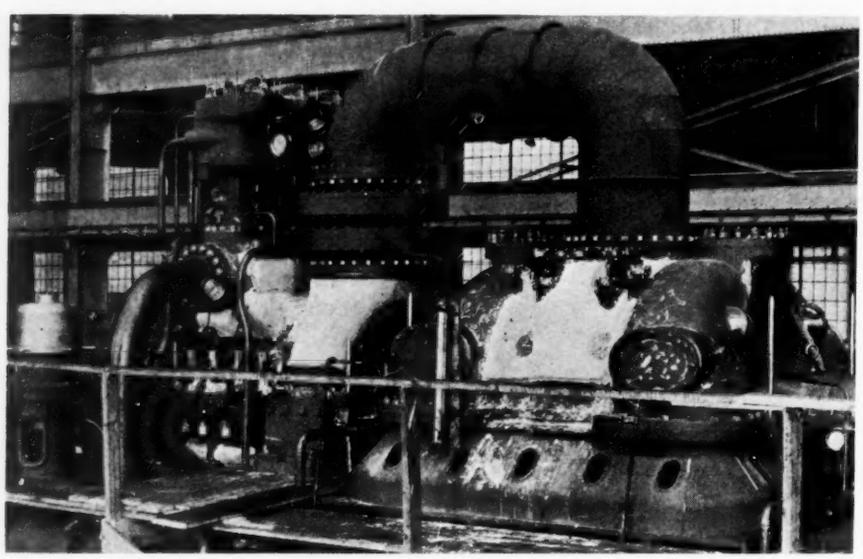
Lay Cornerstone of New Simonds Windowless Plant

Cornerstone of the new windowless plant of the Simonds Saw & Steel Co. was laid at Fitchburg, Mass., Dec. 20, before a gathering including municipal officials and industrial leaders.

Thomas F. Howarth, vice president, officiated at the ceremony, referring to the establishment of the Simonds industries by Abel Simonds 99 years ago. Mr. Howarth marking his fiftieth year with the company paid tribute to the late Daniel Simonds under whose direction great advancement was made.

Responding, President Alvan T. Simonds said that the laying of the cornerstone marked a new era in plant construction. He mentioned the investigation made by the company to determine a more efficient method of manufacture and scientific plant construction.

General Manager G. K. Simonds expressed his confidence in the success of the new plant, saying, "In order to get perfect conditions in a plant, the first requisite is controlled conditions. We cannot control sunlight."



TESTING ONE OF THE WORLD'S LARGEST TURBINES

This is one of two similar turbine-generator units built by Westinghouse Electric & Mfg. Co. at its South Philadelphia, Pa., works for the Bremo Bluffs station of the Virginia Public Service Co. It is designed to operate at 3600 revolutions per minute. It is straight condensing, rated at 15,000 kilowatts capacity with steam at 450 pounds gage, 750 degrees Fahr., and 29 inches vacuum

Otis Steel Buys Continuous Hot Strip Mill Equipment

Cleveland—Otis Steel Co. has signed a contract with the United Engineering & Foundry Co., Pittsburgh, for a portion of machinery for the new 72-inch continuous hot strip mill which is to be installed at its Riverside works. Contract involves approximately $1,800,000 and is the first in the company's expansion program.

Building calls for extension to the present blooming mill buildings and installation of two additional heating furnaces of ten stands of mills. The new mill will roll strips and plates up to 63 inches wide. It will be equipped to produce 36,000 tons of material monthly with an ultimate capacity of 50,000 tons. With the new equipment the company will be enabled to concentrate practically all of present production of sheet bars, plates and slabs for strips in one mill.

A. O. Smith Corp. Shipped 472,000 Tons of Pipe in 1930

A. O. Smith Corp. Milwaukee, in 1930 shipped 472,000 tons of electrically-welded pipe to all parts of the United States, compared with 425,000 tons in 1929.

The 1930 tonnage consisted of about 3000 miles, or 24,272 carloads. The mileage was nearly the same as in 1929, and the carloads compared with 30,474 in 1929. Heavier pipe was made during the year just closed than in 1929.

Corporation Offers Stock

New York—Finance committee of the United States Steel Corp. has voted to offer employes of the Corporation and its subsidiaries the privilege of subscribing for 100,000 shares of common stock of the Corporation at $140 a share. On Jan. 6 common stock closed at $143.50 on the New York stock exchange.

Set Nonferrous Hearing

Washington—Interstate commerce commission announces hearing will be held on part 12, nonferrous metal rate structure investigation 17,000, at New York, March 11, before Commissioner Eastman and Examiners Mullen and Cooper.

More Oil Burners Sold

Sales of domestic oil burners in 1930 are estimated at 125,000 units, making about 654,000 burners now in use, according to the American Oil Burner association, New York. Sales in 1930 were 2 per cent above 1929.

Imports of Iron and Steel Rise but Exports Are Reduced

DECREASE in iron and steel exports from the United States in November was 15 per cent from October, and at 111,968 tons reached the lowest figure since February, 1925. This decline was reflected in reduced shipments in 30 of the 45 classes of products into which the trade is divided, according to the iron and steel division, bureau of foreign and domestic commerce.

Imports, on the other hand, showed a 12 per cent gain over October. This increase was not consistent with individual classifications, 17 showing losses, 14 gains and three having no shipments.

IMPORTS AND EXPORTS
Gross Tons

	1930 Imports	1930 Exports	1929 Imports	1929 Exports
Jan.	42,314	225,090	54,793	274,296
Feb.	43,351	197,426	58,146	259,711
Mar.	55,604	238,333	52,747	270,925
April	52,650	208,640	54,337	277,580
May	52,814	196,120	74,272	261,516
June	48,955	159,392	63,635	247,811
July	39,700	131,772	71,378	270,532
Aug.	35,387	151,235	83,969	242,856
Sept.	40,285	131,211	60,974	222,408
Oct.	38,344	131,850	63,226	247,646
Nov.	43,095	111,968	54,041	241,829
Total (11 mos.)	492,499	1,883,037	691,518	2,817,110
Dec.	.....	.....	47,486	215,242
Total	.....	.....	739,004	3,032,352

Exports for 11 months, aggregating 1,883,037 tons, are 33 per cent in arrears of the 2,817,110-ton figure for the corresponding period of 1929. By the same comparison, imports lag 28 per cent behind 1929's 11 months, being 492,499 tons thus far in 1930, 691,518 tons in 11 months of 1929.

Tin plate shipments, amounting to 13,302 tons, held first place among iron and steel commodities exported. British India, Argentina, China and Canada were the principal counties to which this product was shipped. Black steel sheets, 11,651 tons, went chiefly to Canada. Shipments of skelp, 10,825 tons, held third place, the entire tonnage going to Canada.

Iron ore exports dropped to only 477 tons in November, all but four tons going to Canada.

Proportions of iron and steel sent to each of the five geographic divisions in November are: North, Central America and the West Indies, 55 per cent; South America, 16 per cent; Europe, 6 per cent; Far East, 21 per cent; and Africa, 2 per cent.

Canada was the principal market, shipments of skelp, black steel sheets, plain shapes and scrap being the outstanding items in this trade. The Philippine islands were of next importance, almost half their purchases being galvanized sheets. Chile

ORIGIN OF NOVEMBER IMPORTS
Gross Tons

	Steel Ingots, Blooms	Steel Scrap	Cast Iron Pipe	Steel Bars
Austria	.....	.....	.....	4
Belgium	1,229	.....	62	1,369
Canada	2	1,335	.....	3
Czechoslovakia	.....	.....	.....	7
France	585	.....	779	46
Germany	322	.....	.....	1,335
Japan	.....	55	.....	.....
Netherlands	.....	.....	.....	103
Norway	.....	.....	.....	6
Sweden	.....	.....	.....	139
Switzerland	20	.....	.....	.....
United King.	4	.....	.....	51
Total	2,162	1,390	841	3,063

IMPORTS OF IRON AND STEEL PRODUCTS
Gross Tons

Item	Nov. 1930	Oct. 1930	Nov. 1929
Pig iron	18,292	13,552	12,702
Sponge iron	.....	10	.....
Ferromanganese, spiegeleisen*	2,865	2,247	4,654
Ferrochrome†	.....	.....	20
Ferrosilicon‡	21	74	552
Scrap	1,390	4,336	6,851
Ingots, bloom	2,162	2,264	944
Concrete bars	1,492	541	.....
Hollow bar, drill steel	73	139	3,445
Merchant steel bars	3,063	1,713	.....
Iron slabs	.....	.....	.....
Iron bars	75	109	57
Wire rods	582	496	1,364
Boiler, other plate	101	.....	133
Sheets, skelp	1,711	2,083	1,652
Tin plate	24	23	10
Structural shapes	4,355	4,881	11,961
Sheet piling	.....	.....	.....
Rails, fastenings	558	391	321
Cast iron pipe and fittings	841	364	1,140
Welded pipe	808	252	.....
Other pipe	1,162	822	3,767
Barbed wire	279	428	519
Round wire	216	158	320
Flat wire, strip	37	47	171
Wire rope, strand	195	196	169
Other wire	3	32	30
Hoops and bands	1,587	2,444	2,513
Nails, tacks	711	578	591
Bolts, nuts, rivets	7	13	47
Castings and forgings	105	110	109
Total	43,095	38,344	54,049

*Manganese content.
†Chromium content.
‡Silicon content.

DESTINATION OF NOVEMBER IRON AND STEEL EXPORTS
Gross Tons

	Galvan. Steel Sheets	Tin, Terne Plate	Black Sheets	Steel Bars
Argentina	75	1,963	215	42
Brazil	154	235	56	10
Brit. India	.....	2,571	.....	.....
Canada	460	1,079	9,930	1,554
Cent. America	144	2	5	230
Chile	55	235	562	202
China	156	1,236	1	9
Columbia	189	340	7	7
Cuba	235	531	11	88
Dutch E. Ind.	294	.....	.....	1
Finland	.....	.....	.....	.....
France	.....	.....	302	.....
Greece	.....	146	.....	.....
Italy	.....	.....	29	.....
Japan	130	193	201	43
Java	17	407	.....	.....
Mexico	221	973	66	36
Norway	60	.....	1	4
Panama	8	.....	.....	175
Philippines	3,511	891	3	61
Peru	1	414	.....	69
Russia	.....	.....	.....	161
Turkey	.....	.....	.....	.....
United King.	.....	.....	103	624
Uruguay	173	676	73	.....
Venezuela	126	1	1	37
Total	6,270	13,302	11,651	3,350

EXPORTS OF IRON AND STEEL PRODUCTS
Gross Tons

Item	Nov. 1930	Oct. 1930	Nov. 1929
Pig iron, not including ferroalloys	565	1,419	678
Ferromang. and spiegeleisen	51	.....	103
Scrap	7,917	12,156	55,554
Ingots, blooms	1,166	579	1,730
Iron bars	91	92	397
Steel bars	3,350	5,263	9,940
Alloy steel bars	244	286	744
Wire rods	2,543	1,637	2,518
Plates	6,743	4,954	16,698
Skelp	10,825	20,061	17,499
Iron sheets, galv.*	426	473	7,701
Steel sheets, galv.*	6,270	6,123	.....
Steel sheets, bl'k.	11,651	15,494	10,352
Iron sheets, bl'k.	868	908	1,337
Hoops, bands, strip	2,125	1,916	4,634
Tin, terneplate	13,302	14,029	16,781
Shapes, not fabr.	8,579	10,801	25,465
Shapes, fabr.	6,414	8,125	10,972
Tanks, complete and knocked down†	4,167	1,759	.....
Metal lath	297	343	248
Steel rails	3,339	1,546	12,342
Rail fastenings	1,558	1,032	2,425
Boiler tubes	900	837	1,474
Casing, line pipe	2,533	3,295	4,265
Malleable screwed pipe fittings	816	669	840
Cast iron screwed pipe fittings	300	489	588
Cast iron pressure pipe fittings	504	839	2,323
Cast iron soil pipe and fittings	983	920	1,798
Black, gal. welded wrought pipe*	444	703	9,447
Black and gal. welded steel pipe*	4,252	4,390	.....
Plain wire	1,985	2,227	2,714
Barbed wire, fencing	2,473	2,901	3,476
Woven wire screen cloth	81	73	108
Wire rope	227	266	316
Insulated wire and cable	20	36	159
Other wire	393	669	517
Wire nails	781	733	604
Nails, not wire	216	412	903
Tacks	24	35	42
Bolts, nuts, rivets	533	645	1,058
Iron castings	391	228	747
Steel castings	465	498	646
Car wheels, axles	586	1,445	1,606
Horseshoes	15	24	56
Forgings	555	520	684
Total	111,968	131,850	232,489

*Combined prior to 1930.
†Included in a miscellaneous classification prior to 1930.

bought a variety of items, outstanding of which was fabricated shapes. Argentina took a considerable quantity of tin plate, and Japan's chief purchase was scrap.

Pig iron was the major item imported in November, nearly all of it coming from British India. Shapes and merchant steel bars were of next rank, in the order named, Belgium and Germany being the principal sources in both instances.

ORIGIN OF NOVEMBER IMPORTS
Gross Tons

	Iron Ore	Pig Iron	Man-ga-nese	Ferro-man-ga-nese
Australia	7,312			
Belgium		54		
Brazil			1,816	
Brit. India		16,999	2,600	
Canada		54	3,134	714
Chile	41,338			
Germany				
Gold Coast			2,350	
Greece			4	
Kwantung		30		
Netherlands		155		
Newfoundla'd	9,530			
Norway				
Russia	8,729		469	
Spain	434			
Sweden	6,606			
United King.	50	1,000		2,151
Total	73,999	18,292	10,378	2,865

DESTINATION OF IRON AND STEEL EXPORTS
Gross Tons

Country	1930 Nov.	1930 Oct.	1929 Nov.
North and Central Am. and W. Indies	62,039	78,593	111,792
Cuba	1,869	2,367	5,027
Guatemala	1,221	187	580
Honduras	233	436	444
Mexico	3,319	6,929	7,090
Panama	701	1,116	1,481
Salvador	74	223	363
Brit. W. Ind.	228	791	684
Other W. Ind.	4,270	925	1,349
Other Cent. Am.	131	307	1,025
Canada, Newfoundland	49,993	65,312	93,749
South America	18,532	19,304	30,710
Argentina	5,283	6,519	4,526
Brazil	1,416	1,026	4,870
Chile	5,577	5,998	14,296
Colombia	1,053	1,035	1,493
Peru	665	995	1,503
Uruguay	1,976	1,052	175
Venezuela	1,630	2,430	3,209
Other So. Am.	932	249	638
Europe	6,238	9,952	21,432
France	688	500	529
Germany	173	3,510	888
Italy	37	89	6,182
Poland, Danzig	9		7
Russia, Europe	1,614	567	2,523
Spain	230	9	4,360
Sweden	72	282	335
United Kingdom	2,035	2,783	5,224
Other Europe	1,380	2,212	1,384
Far East	23,342	23,754	66,083
British Malaya	82	535	576
China	2,611	1,406	3,559
Dutch E. Ind.	2,171	4,112	2,669
India, Ceylon	4,332	1,501	3,543
Hong Kong	348	1,031	735
Japan	5,122	9,395	42,522
Kwantung	211	74	1,628
Philippine Isl.	7,215	4,867	7,023
Australia	342	493	1,844
New Zealand	43	148	371
Other Asia	865	192	1,613
Africa	1,817	247	2,472
Union of S. Af.	706	42	385
Egypt	150	126	1,579
Mozambique	926	9	72
Other Africa	35	70	436

Galvanized Ware Output Gains During October

Production of galvanized pails and tubs in October rose to 130,906 dozen, a 21 per cent gain from September. Shipments practically held the latter month's level. Other galvanized ware also showed October increasing in production, monthly figures for which follow by the bureau of the census from 14 manufacturers, comprising a large portion of the industry:

(In dozens)

1929	Pails and Tubs Production	Pails and Tubs Shipments	Other Ware Production
Oct.	129,282	135,197	45,117
(10 mos.)	1,409,449	1,448,855	475,147
Nov.	102,400	90,684	32,951
Dec.	112,962	107,733	33,114
(Year)	1,624,811	1,647,272	541,212
1930			
Jan.	145,588	154,731	33,982
Feb.	119,739	129,853	35,121
March	135,178	135,602	37,963
April	131,015	120,552	44,058
May	113,645	107,496	44,405
June	89,982	82,956	40,646
July	91,879	104,096	42,056
Aug.	103,050	103,354	46,730
Sept.	103,177	116,875	38,218
Oct.	130,906	115,185	40,084
(10 mos.)	1,164,159	1,170,700	403,263

Barrels in Output Decline

November production of steel barrels at 36.5 per cent of capacity was 497,539 units, or eight points beneath the October 44.1 output ratio, when 616,121 barrels were produced. The table following is by 27 companies to the bureau of the census:

1929	Production	Shipments	Unfilled orders within 30 days
Nov.	572,621	567,257	285,295
(11 mos.)	7,713,634	7,698,523	
Dec.	624,365	619,058	302,052
(Year)	8,337,999	8,317,581	
1930			
Jan.	650,764	643,120	304,354
Feb.	604,709	599,324	313,349
March	771,686	785,951	417,933
April	769,061	766,617	322,161
May	731,087	736,147	393,843
June	651,559	638,358	319,754
July	617,420	621,091	311,630
Aug.	553,842	552,265	237,745
Sept.	564,927	565,204	253,745
Oct.	616,121	619,558	275,778
Nov.	497,539	500,409	230,960
(11 mos.)	7,028,715	7,028,044	

Coal Consumption Is Off

Coal consumed in the United States in the first 11 months of 1930 decreased 64,000,000 tons from the same period in 1929, states the National Industrial Conference board, New York.

Reason given, in addition to the industrial depression, are greater efficiency in burning of coal by large consumers, competition of fuel oil and natural gas, efforts of Canadian government to substitute coke for anthracite, development of water power, and increased production of coal in foreign countries.

Mechanical Stokers Set Second Low for Year

November sales of mechanical stokers as reported to the bureau of the census by the 11 leading manufacturers totaled 71 of 21,103 horsepower. In comparison, sales of 92 stokers having 38,276 horsepower were reported in October, and there were 107 of 39,469 horsepower in November, 1929. Following table shows November to be the second low month of 1930:

1929	Stokers sold	Fire tube boilers	Water tube boilers
November	107	43	64
(11 mos.)	1,637	676	961
December	79	30	49
(Year)	1,716	706	1,010
1930			
January	53	24	29
February	73	26	47
March	89	45	44
April	108	46	62
May	96	41	55
June	151	70	81
July	150	83	67
August	115	61	54
October	92	46	46
Nov.	71	41	30
(11 mos.)	1,126	554	572

Electric Trucks in Slump

Reversing the upward turn shown in October, shipments of electrical trucks and tractors in November consisted of only 45 vehicles compared with the October's 93. Domestic shipments fell from 90 to 36 units. Total shipments as reported to the bureau of the census by the ten leading manufacturers, are low for at least three years:

		Shipment	
1929	Total	Domestic	Export
November	118	110	8
(11 mos.)	1,868	1,735	133
December	151	124	27
Year	2,019	1,859	100
1930			
January	140	123	17
February	113	106	7
March	123	109	14
April	106	101	5
May	144	125	19
June	95	63	32
July	108	99	9
August	92	81	11
September	81	75	6
October	93	90	3
November	45	36	9
(11 mos.)	1,140	1,008	132

Orders for Boilers Down

New orders for 777 boilers that were placed in November were distinctly under the October mark of

1189 units, and set a low for the past two years. November orders were for 709,322 square feet, October's were for 852,022 square feet.

Malleable Castings Show Slight Output Decline

Malleable castings production was 27.7 per cent of capacity in November when 26,873 net tons were produced by 117 companies. This is a 1.3 point decline from October's operating rate of 29 per cent. Shipments were off from October, though orders booked showed a rise, according to report made to the bureau of the census in the following:

	Production, tons	Shipments, tons	Orders booked tons	Per cent cap. operated
1929				
Nov.	46,459	46,487	40,145	47.7
(11 mos.)	778,827	770,461	742,403	73.5
Dec.	46,029	47,689	43,475	47.3
(Year)	824,856	818,150	785,878	71.3
1930				
Jan.	61,381	57,820	58,009	61.6
Feb.	65,942	59,971	61,606	67.4
March	63,464	65,164	60,915	64.6
April	61,984	60,875	54,625	63.1
May	53,502	55,656	47,022	53.8
June	39,347	43,937	33,865	40.3
July	30,911	32,656	30,068	31.0
Aug.	25,614	31,845	25,409	26.2
Sept.*	26,528	29,223	26,251	27.2
Oct.*	28,785	29,206	24,171	29.0
Nov.**	26,873	25,747	27,187	27.7
(11 mos.)	484,331	492,100	449,128	44.7

*Revised. **Preliminary.

Less Steel Furniture Made

Steel furniture shipments in November in the business group totaled $1,672,518, compared with $1,900,865 in October. New orders in the group likewise showed an easing off. Declines were registered also for the month in both bookings and shipments of shelving, according to 34 manufacturers reporting to the bureau of the census:

	Business Group		Shelving	
	New orders	Shipments	New orders	Shipments
	(In Dollars, 000 omitted)			
1929				
Nov.	2,900	2,631	801	859
(11 mos.)	31,453	31,317	10,819	10,466
Dec.	2,583	2,781	735	856
(Year)	34,036	34,038	11,554	11,322
1930				
Jan.	2,886	2,890	724	674
Feb.	2,370	2,549	758	682
March	2,627	2,726	839	812
April	2,523	2,427	796	814
May	2,310	2,342	725	751
June	2,006	2,168	699	705
July	1,840	1,811	596	604
Aug.	1,788	1,985	526	555
Sept.	1,795	1,879	512	497
Oct.*	1,855	1,901	534	593
Nov.	1,637	1,673	429	458
	23,640	24,354	7,140	7,147

*Revised.

1930 Pig Iron Production Proves Disappointing

YEAR-END blast furnace operations, dropping below expectations, carried December production of coke pig iron to a level which was the lowest in almost nine years and thus completed the most disappointing year in recent pig iron history. Output in 1930 amounted to only 31,441,403 gross tons, a loss of 10,828,780 tons from the all-time record of 42,270,183 tons of 1929, and 6,390,338 tons less than the 37,831,741 tons of 1928. The 1930 total, as a matter of fact, was the smallest since the 31,076,572-ton figure of 1924.

Eleven more blast furnaces were made inactive in December and this was reflected in the average daily rate of 53,730 tons, a level which was the lowest since the 53,090-ton rate of January, 1922. Compared with the daily production of 62,182 tons of November, the drop was 8452 tons per day, or 13.6 per cent. Daily output has declined steadily from 106,371 tons per day in April to the present rate and only in one month, July, was the loss in tonnage greater than the December reduction. In the 8-month period, production has dropped 49.5 per cent.

Total production in December aggregated 1,665,630 tons, against 1,865,458 tons in November, the reduction being 199,828 tons. December, however, was a one-day longer month than November. For the full year, average daily output averaged 86,141 tons, against 115,808 tons in 1929 and 103,365 tons in 1928.

Active blast furnaces reached their highest point for the year in March with 184 and in the nine months to follow, 88 have been blown out or banked. April and May showed losses of 2 each; June and July, 18 each, August, 7; September, 11; October, 15; November, 4; and December, 11. The December total of 96 was the smallest since 95 in October, 1921.

Relating production to potential capacity, operations in December represented 38.1 per cent, as compared with 44.1 per cent in November and 49.6 per cent in October.

(*Concluded on Page* 79)

RATE OF OPERATION

(Relation of Production to Cacapity)

	1930†	1929*	1928‡
January	65.0	79.0	66.8
February	72.1	82.2	72.5
March	74.5	85.5	74.8
April	75.4	87.4	76.8
May	74.2	89.8	77.0
June	69.3	88.5	74.4
July	60.3	87.2	71.8
August	57.8	86.4	73.3
September	53.8	83.3	74.1
October	49.6	82.6	78.9
November	44.1	75.8	79.8
December	38.1	65.5	78.8

†Based on capacity of 51,490,790 tons Dec. 31, 1929; *on capacity of 51,069,895 tons; ‡on capacity of 50,329,750 tons. Capacities by American Iron and Steel institute.

DECEMBER IRON PRODUCTION

	No. in blast Last day of month		Total tonnage made	
	Dec.	Nov.	Merchant	Non-merchant
Ohio	17	20	58,869	245,336
Pennsylvania	33	36	76,913	424,014
Alabama	8	10	80,529	54,121
Illinois	10	11	85,914	118,233
New York	5	6	50,623	32,176
Colorado	2	3		
Indiana	7	8		
Maryland	2	2	8,132	260,190
Virginia	2	2		
Wisconsin	0	0		
Kentucky	1	0		
Massachusetts	1	1		
Tennessee	0	0	10,649	86,112
Utah	1	1		
West Virginia	3	3		
Michigan	3	3		
Minnesota	1	1	15,597	41,934
Missouri	0	0		
New Jersey	0	0		
Spiegel and ferro, all states	....	....	6,940	9,348
Total	96	107	394,166	1,271,464

AVERAGE DAILY PRODUCTION

	1930	1929	1928	1927
Jan.	91,573	110,742	92,113	100,043
Feb.	101,640	114,942	99,954	105,021
Mar.	104,930	119,662	103,199	112,326
Apr.	106,371	122,106	106,066	114,146
May	104,564	125,753	106,219	109,388
June	97,817	123,887	102,745	102,991
July	85,110	122,016	99,120	95,311
Aug.	81,455	120,845	101,193	95,183
Sept.	75,893	116,548	102,120	92,750
Oct.	69,851	115,747	108,824	90,710
Nov.	62,182	106,081	110,155	88,728
Dec.	53,730	91,513	108,702	87,039
Ave.	86,141	115,808	103,365	99,422

MONTHLY PRODUCTION

	1930	1929	1928
Jan.	2,838,751	3,433,028	2,855,515
Feb.	2,845,937	3,218,376	2,898,668
Mar.	3,252,822	3,709,518	3,199,175
April	3,191,119	3,663,167	3,181,975
May	3,241,477	3,898,344	3,292,790
June	2,934,508	3,715,104	3,082,340
July	2,638,441	3,782,511	3,072,711
Aug.	2,525,105	3,746,198	3,136,995
Sept.	2,276,781	3,496,454	3,063,593
Oct.	2,165,374	3,588,146	3,373,539
Nov.	1,865,415	3,182,420	3,304,656
Nov.	1,865,458	3,182,420	3,304,656
Dec.	1,665,630	2,836,917	3,369,784
Total	31,441,403	42,270,183	37,831,741

Industrial Men in the Day's News

Paul Llewellyn, Chairman, Empire Steel Corp., Mansfield, O.

WITH but one company ever since his university days, he now becomes board chairman of the reorganized Empire Steel interest at Mansfield.

FROM roll-turning in 1908, he advanced through various promotions, to the president's chair of Interstate, succeeding his father, who died in 1925.

DURING the World war, he was identified with the chemical warfare service branch, being discharged as major in March, 1919.

IDENTIFIED with one company all of his business career until it was acquired by other interests, Paul Llewellyn now, at the age of 44, makes a change. He has become chairman of the board of the reorganized Empire Steel Corp., Mansfield, O., as noted in STEEL of Nov. 27. He is in active charge of management and in control of operations. The company he served so long was the Interstate Iron & Steel Co., Chicago, of which he had been president since the death of his father, Sept. 3, 1925. This company was acquired by Central Alloy Steel Corp., Massillon, O., Oct. 1, 1929, and with other interests merged to form Republic Steel Corp., in December, 1929. Mr. Llewellyn was elected a director of Republic Steel Corp., Youngstown, O., in April of this year.

Born in Milwaukee, Sept. 1, 1886, Mr. Llewellyn took a preparatory course at Mercersburg academy, Mercersburg, Pa., and then in 1905 entered Sheffield scientific school, Yale university, to take a 3-year course in mechanical engineering. In 1908 he started in the roll-turning department of the Cambridge, O., plant of Interstate Iron & Steel Co., commencing to learn the business from the bottom up. He later worked in the shipping department and then was appointed assistant superintendent. From 1910 to 1912 he served as Cambridge, O., works manager. In the latter year he was appointed assistant works manager at the Interstate company's East Chicago, Ind., plant, and two years later was promoted to manager. In 1916 he was given full direction of the South Chicago plant as well. From 1914 to 1916 he supervised the reconstruction at Marion, O., of the former Cambridge branch.

Mr. Llewellyn entered governmental service as captain in what later became the chemical warfare service and in seven months was promoted to major, the rank held by him when discharged in March, 1919. He returned to Chicago to become identified with the sales department of Interstate Iron & Steel Co. In 1921 he was made sales manager of the bar division and a year later was elected vice president in charge of all sales. He was elected president of the company in September, 1925, to succeed his father.

DWIGHT H. WAGNER, vice president, Wheeling Corrugating Co., Martins Ferry, O., and East Wheeling, W. Va., subsidiary of Wheeling Steel Corp., Wheeling, on Dec. 29 was elected president of the former company to succeed W. W. Holloway, elected president of Wheeling Steel Corp., as noted in STEEL of Nov. 6, 1930.

Other officers elected at the reorganization meeting are : W. E. Ackerman, vice president in charge of operations; J. O. Entrekin, vice president in charge of sales; Ernest G. Walter, secretary, and Elmer A. Rose, treasurer.

Mr. Wagner has been with the Corrugating company for about 30 years. He was born in Wheeling and attended public schools, Linsly institute and later Cornell university. Upon graduation from Cornell, he became draftsman at the East Wheeling plant of Wheeling Corrugating Co. He later served as head of various departments, then was made in turn secretary, vice president and now president.

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Roland N. Jessop has been appointed assistant sales manager for Ohio Electric Mfg. Co., Cleveland.

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Charles Fell has retired as general superintendent of Lorain, O., works of National Tube Co., Pittsburgh, and has been succeeded by E. W. Brown. Mr. Fell rendered 48 years continuous service.

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S. Wells Utley, vice president and general manager, Detroit Steel Casting Co., Detroit, was recently re-elected president of Michigan Manufacturers' association.

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John Collins Jr., for the past several years vice president and chief engineer of United States Engineering Corp., New York, was recently appointed chief engineer for Standard Management & Operating Corp., San Francisco. He will have charge of

all construction and engineering enterprises by the Management company for Pacific Public Service Co., its subsidiaries and for all clients of the company. He will also act in an advisory capacity regarding operations in properties now controlled by the company.

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R. L. Robinson, for a number of years with the Griscom-Russell Co., New York, was recently made sales manager for Babcock & Wilcox Co.

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Charles F. Abbott, executive director of American Institute of Steel Construction, New York, has been elected vice president of the National Council of Traveling Salesmen's associations.

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M. L. Jacob, recently in charge of the industrial engineering department of Charles Hecht & Co., New York, has recently become associated with Aires, Stone & Pettay, Pittsburgh, engineers, his name being added to that of the firm.

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Charles C. Hawes, who for several years has been employed in the Cliffs Shaft laboratory of Cleveland-Cliffs Iron Co., Ishpeming, Mich., has been appointed chief chemist to succeed Fred J. Baker, retired on the company's pension list Dec. 1.

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W. L. Allen, formerly president of Sheffield Steel Corp., Kansas City, Mo., prior to its merger with American Rolling Mill Co., Middletown, O., since which time he has been a vice president of the latter company, has also been elected chairman of Gleaner Combine Harvester Corp., Kansas City, to succeed S. H. Hale. Mr. Hale remains as a director.

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Edward N. Hurley has been re-elected chairman of the board of the Electric Household Utilities Corp., Chicago, formerly the Hurley Machine Co. Other officers are: President, Edward N. Hurley Jr.; vice presidents, Myer Hurley, John T. Hume, and R. S. Chamberlain; vice president and secretary, James A. McCoy, and treasurer and assistant secretary, John Proudfoot.

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Harry S. Ransom, who since last spring has been special representative of sales and engineering departments, Fort Pitt Steel Casting Co., McKeesport, Pa., has been appointed manager of sales to fill the vacancy caused by the resignation of Charles A. Lynch last September as noted in STEEL of Sept. 5. Mr. Ransom prior to last spring was away from the steel foundry industry for a period.

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F. W. Peek Jr., consulting engineer, General Electric Co., Pittsfield, Mass., became chief engineer there Jan. 1. He succeeds Guiseppe Faccioli, who retired a few months ago because of ill health. Mr. Peek became identified with company's Schenectady, N. Y., works in 1905, in 1909 he joined the consulting engineering department, and in 1916 went to Pittsfield.

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Henry D. Sharpe, president and treasurer, Brown & Sharpe Mfg. Co., Providence, R. I., and James W. Hook, president, Geometric Tool Co., New Haven, Conn., were re-elected to the New England council at the state meetings at the sixth New England conference recently. Mr. Sharpe also was re-elected chairman of the Rhode Island council.

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Richard Jones Jr., chief counsel and secretary of Republic Steel

Richard Jones Jr.

Corp., Youngstown, O., has resigned. Mr. Jones is the last of the old Republic Iron & Steel Co. executives to leave the merged interests.

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A. D. Chisholm, Ironwood, Mich., assistant general manager of Michigan mines for Pickands, Mather & Co., Cleveland, since Jan. 1 has been made assistant general manager of all Lake Superior mines with headquarters at Duluth. Other promotions follow:

E. W. Leach, district manager in charge of Hibbing and western Mesabi range mines, Hibbing, Minn., was made manager of all Minnesota mines.

L. C. David, Elcor, Minn., formerly general superintendent of mines on the eastern Mesabi and Vermilion ranges, was made general superintendent of Hibbing and western Mesabi range mines, Hibbing.

Richard P. Zinn, Ironwood, Mich., was made manager of all Michigan mines.

Abe Matthews Jr., formerly general superintendent of mines on Gogebic and Marquette ranges, Michigan, was made general superintendent of mines on the eastern Mesabi and Vermilion ranges, Elcor.

W. A. Knoll, formerly superintendent of Palms-Anvil and Plymouth mines in Michigan, was made general superintendent of Gogebic and Marquette range mines, Ironwood.

Kenneth Duncan, formerly superintendent of Dunwoody mine, Chisholm, Minn., was made superintendent of Palms-Anvil and Plymouth mines, Gogebic range, Plymouth, Minn.

P. S. Gray, assistant superintendent of Danube and Orwell mines, Mesabi range, is now superintendent of Dunwoody mine, Mesabi range, Chisholm, Minn.

David B. Cavan, superintendent, Penn mines, Vulcan, Mich., now is superintendent of Newport and Cary mines, Ironwood, Mich.

H. J. Richards, superintendent of Sunday Lake mine, Wakefield, Mich., now is superintendent of Penn mines, Vulcan.

H. L. Schiber, formerly superintendent of Balkan-Judson mine, Alpha, Mich., succeeds Mr. Richards.

Carl Johnson, assistant superintendent, Palms-Anvil mine, Bessemer, Mich., now is superintendent of Balkan-Judson mine.

E. C. Carlson, mining engineer, Sunday Lake mine, is now assistant superintendent at Palms-Anvil mine.

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Andrew J. Maloney, president, Reading Iron Co., Reading, Pa., and its parent company, Philadelphia & Reading Coal & Iron Co., Philadelphia, has been elected a director of the National Power & Light Co.

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D. R. Wilson, president of Wilson Foundry & Machine Co., Pontiac, Mich., has been elected a director of the Fedders Mfg. Co., Buffalo, manufacturer of automobile radiators.

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W. E. England, former chief engineer of F. B. Stearns Co., Cleveland, has been added to the engineering staff of the Houde Engineering Co., Buffalo, manufacturer of shock absorbers and other metal specialties.

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George G. Crawford, president of Jones & Laughlin Steel Corp., Pittsburgh, who formerly was president of Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., was recently paid a tribute by his friends and admirers when a silver loving cup was presented to him at a meeting in Birmingham, Dec. 31. More than 1200 Alabamians contributed not more than $1 each in a public sub-

(*Concluded on Page* 79)

Obituaries

W FLETCHER BARNES, 89, inventor of the jig saw upright drill, and founder of the W. F. & John Barnes Co., Rockford, Ill., manufacturer of drills and other machinery, died in that city Dec. 28, of paralysis. He retired several years ago. Born on a farm near Mount Morris, N. Y., Aug. 6, 1841, he removed to Rockford in 1861, where he worked with his brother John, then a member of Barnes & Boynton, manufacturer of water power seeders. He left to work for Clark & Utter, remaining until 1864, when he located in Aurora, Ill., where he was employed in the shops of the Chicago, Burlington & Quincy railroad. After four years he returned to Rockford to resume his Clark & Utter connection, but maintained a small machine shop in his home. He next opened a model shop where he perfected some of his ideas. With his brother John he organized the W. F. & John Barnes Co. which started to manufacture machines in 1873. The present plant was built in 1882, since which time it has concentrated on upright drills, making in all sizes up to 50 inches.

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Andrew Turnbull, 98, well known inventor, died at his home in New Britain, Conn., Dec. 22.

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H. G. Johnston, 80 president of American Well & Prospecting Co., Corsicana, Tex., manufacturer of oil field machinery, died Dec. 10.

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Asa Walter Griffith, 64, formerly assistant general superintendent of the Carnegie Steel Co. in the Youngstown district, died Dec. 15 at the home of his son in McDonald, O.

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John Gillespie, 80, at one time identified with Sylvan works at Moline, Ill., of Republic Steel Corp., Youngstown, O., died Dec. 13 in Kenosha, Wis.

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Ralph H. Plumb, 54 president of Buffalo Bolt Co., Buffalo, died Jan. 3. He was a graduate of Massachusetts Institute of Technology and had headed the bolt company for more than ten years.

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Roswell W. Smith, 46, president of Albert Smith & Sons Inc., Irvington, N. J., steel fabricator, died at Millburn, N. J., Dec. 29. The business was founded at Newark, N. J., 75 years ago by his father, whom he succeeded.

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John W. McKeon, who for nine years before he went to California for his health was vice president of West Michigan Steel Foundry Co., Muskegon, Mich., died recently in Sierra Madre, Calif.

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Frederick B. Farnsworth, 80, president and treasurer of Eastern Machinery Co., New Haven, Con., died Dec. 24. He also was president of McLagon Foundry Co., New Haven, and formerly was an officer of the National Founders' association, American Foundrymen's association, and the only honorary director as well as one of the original organizers of the Connecticut Manufacturers' association. He served as mayor of New Haven from 1897 to 1899.

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Peter J. Smith, 67, vice president and formerly general manager of Manitoba Rolling Mill Co. Ltd., Winnipeg, Man., died at Toronto, Ont., Jan. 1. After serving in responsible positions in steel plants in eastern Canada, Georgetown, Montreal, and Belleville, Mr. Smith in 1907 established a rolling mill at St. Boniface, Man., which mill later was moved to Selkirk, where he continued as general manager. When it was absorbed by Manitoba Bridge & Iron Works, Mr. Smith took an active interest in public affairs and served for a time as mayor of Selkirk.

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William Gardner, senior vice president and a director of United Engineering & Foundry Co., Pittsburgh, died there Dec. 28, following a brief illness. Active in the sale of rolls and rolling mill equipment for almost 40 years, he spent most of that time with the United company. Born in Scotland March 3, 1865, he came to this country when 14 and in 1891 became a salesman for the Mesta Machine Co., Pittsburgh. Two years later he joined the Frank-Kneeland Machine Co., now part of the United company. In 1907 he severed that connection to become financially interested in the American Roll & Foundry Co., Canton, O. When that company was purchased in 1910 by the United company, Mr. Gardner went with the latter as chief roll salesman. In 1919, he was elected vice president in charge of roll and steel castings sales, and held this position until his death.

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John T. Wilkin, 67, president for more than 12 years of Connersville Blower Co. Inc., Connersville, Ind., which last February merged with P. H. & F. M. Roots Co., and Wilbraham-Green Blower Co. into the Stacey Engineering Co., Columbus, O., of which he was vice president, died at Connersville Dec. 27 of heart paralysis. Born at Danville, Ind., Mr. Wilkin was graduated from Rose Polytechnic institute in 1886 and located in Connersville, where he was employed as draftsman by the P. H. & F. M. Roots Co. A few years later, with others, he organized the Connersville Blower Co., becoming its first chief engineer. He later became vice president, and after the death of E. W. Ansted was elected president in July, 1917 to succeed him. He is credited with many important inventions relating to the blower business and recently completed a new gearing arrangement, considered his most important achievement along that line. He was appointed member of the publication committee of American Society of Mechanical Engineers and also was a member of the Franklin institute.

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Walter F. Baker, president of Charles F. Baker & Co., Boston, manufacturers of nails, died Jan. 2. He became head of the nail concern in 1911, having previously been a wool merchant. He was a graduate of Harvard university.

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George A. Ray, vice president of the Taylor & Fenn Co., Hartford, Conn., died Dec. 30. He was born in Providence, R. I., in 1875 and at 13 was employed by Brown & Sharpe Mfg. Co. After 17 years he became foundry foreman for Phoenix Iron Foundry Co., Hartford, and later became superintendent. In 1922 he was elected vice president and director of company since known as the Taylor & Fenn Co. He served as president of the New England Foundrymen's association, and also was a member of the American Foundrymen's association.

Harnischfeger Absorbs Milwaukee Crane

Effective Jan. 1, the Milwaukee Electric Crane & Hoist Corp., which has been operating as a subsidiary of the Harnischfeger Corp. since 1928, has consolidated with the parent company and will be known as the Milwaukee division.

The line of roller bearing cranes and hoists will continue to be built in the recently enlarged plant at Sixtieth and Greenfield avenues, West Allis. The main works of the Harnischfeger Corp. are at 4400 West National avenue. D. E. Patterson, general manager of the Milwaukee Electric Crane and vice president of the Harnischfeger Sales Corp., will be in charge of the crane and hoist sales of both concerns. N. P. Farrar will be industrial sales manager of the crane and hoist divisions of both. The consolidation is designed to effect material economies by eliminating duplication of sales effort.

Here and There in Industry

AUSTIN Co., Cleveland, has opened a district office at 809 First National Bank building, 1 Federal street, Boston, the second new district office in the present expansion program. A. D. Engle, formerly sales engineer in the company's New York office, will be in charge of the Boston district. Construction of the $1,500,000 windowless plant for the Simonds Steel Industries at Fitchburg, Mass., will be one of the matters handled largely by the Boston office. Additions to its offices reflect confidence of the Austin Co. in business revival.

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Lake Superior Iron Ore association, Cleveland, statistical bureau of the lake ore industry, has moved its offices to 1154 Union Trust building.

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Rolls-Royce of America Inc., Springfield, Mass., is consolidating its coach building operations at its plant there, transferring departments from its plant on Long Island. Economy is sought by the rearrangement.

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Simonds Mfg. Co., Pittsburgh, has been appointed by the Ramsey Chain Co., Albany, N. Y., to distribute its silent chain drives, sprockets and chain in western Pennsylvania and West Virginia.

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Forest City-Walworth Run Foundries Co., Cleveland, has changed its name to Forest City Foundries Co. for the sake of brevity. No change has been made in organization or address.

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Hoffman Specialty Co., Waterbury, Conn., has transferred the electrical division, handling its electric heater, to Los Angeles, under the name of Hoffman Specialty Co. of California Ltd. H. H. Daley, formerly sales manager for the Majestic Heater Co., San Francisco, is manager.

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E. A. Eddy Machinery Co. Inc., Providence, R. I., under its recent reorganization, has elected the following officers: Louis M. Lincoln, president and treasurer; Joseph E. McCrudden, secretary, and William J. Hatten, director, the officers also being directors.

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Ohio Steel Foundry Co., Lima and Springfield, O., has established at Battelle Memorial institute, Columbus, O., a research project to consist of a comprehensive study of steel foundry practice, with a view to developing improvements and economies in practice and betterment of finished products.

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Hays Corp., Michigan City, Ind., is building a foundry plant, adding 6000 square feet to its present facilities. The company manufactures combustion efficiency instruments.

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Dixie Bronze Co. Inc., Birmingham, Ala., has been formed to take over the plant and business of the Dixie Brass & Foundry Co. Inc. Charles Wegelin and Louis Callot, vice president and secretary of the former company, have become president and vice president of the new organization and J. E. McAllister is secretary.

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Steel Co. of Canada Ltd., Hamilton, Ont., will continue to operate its ore unloading plant at Point Edward, Ont., only provided it is unable to move ore through the new Welland canal. This canal, it is expected, will be ready for operation and the passage of large boats early in the spring.

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L. K. Bruckner Co., Jep Sales Co. and Monarch Brass Co., Milwaukee, have been consolidated as the Monarch Plumbing & Heating Supply Co. A new location has been obtained at 407 West Juneau avenue, where about 5000 square feet are available, almost double the total area of the three plants. Leo K. Bruckner is president of the new organization, J. Edward Pulte vice president, and Edward H. Heuel secretary and treasurer.

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Dominion Engineering Co., Montreal, Que., has received several important contracts for hydroelectric equipment, including the following: From the West Kootenay Power Co., three 19,000-horsepower turbines for the Corralin Falls development; from the Gatineau Power Co., one 34,000-horsepower turbine for Paugan Falls; and from the Shawinigan Water & Power Co., four 38,000-horsepower turbines to be used at the Rapids Blanc development.

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Lummus Co., Boston, has been organized with $10,000,000 capital to take over the business of the Walter E. Lummus Co., Boston, to design and manufacture distillation and refining equipment for the alcohol, chemical and petroleum industries. Substantial blocks of stock in the new company are held by the Superheater Co. and the Babcock & Wilcox Co., New York. The Superheater Co., with plants at East Chicago, Ind., and Sherbrooke, Que., builds heat transfer equipment for the refining field. The Babcock & Wilcox Co. manufactures water tube steam boilers, stokers, economizers, oil burners and other power plant auxiliaries, with plants at Bayonne, N. J., Barberton and East Liverpool, O., and Augusta, Ga. Walter E. Lummus is president and treasurer of the new company, Raymond R. Collins vice president and secretary.

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Solar Appliance Corp., Cleveland, has been formed to manufacture domestic coal stokers and has taken over a plant at 6415 Detroit avenue. H. J. Monson is president, John Kauffman secretary-treasurer, and F. C. Monkosky vice president and sales manager. Mr. Monson was founder of the Guide Lamp Corp., sold some time ago to General Motors Corp., of which he was made a vice president, resigning to form the Solar Appliance Corp.

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Diamond Machine Co., Providence, R. I., manufacturer of grinding and polishing machinery, has appointed Motch & Merryweather Machinery Co., 2842 West Grand boulevard, Detroit, exclusive dealer for the Diamond line of machinery in Detroit. Motch & Merryweather company will actively handle the sale of this company's grinding and polishing machinery, featuring hydraulic drive face grinding machines and surface grinders.

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Union Carbide & Carbon Corp., New York, announces that from Jan. 1 those units whose products are used in the main for oxyacetylene welding and cutting will market their products through the Linde Air Products Co., New York. This will make possible purchase through this one company of Linde oxygen, Union carbide, Prest-O-Lite dissolved acetylene and equipment and supplies manufactured by the Oxweld, Prest-O-Weld and Purox companies. The change is made for convenience of users.

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Columbus Heating & Ventilating Co., Columbus, O., has been incorporated by former employes of the company of the same name recently split up by sale of its gas equipment division to the Surface Combustion Co., Toledo, O., and its blower division to the Buckeye Blower Co. The new organization, keeping the former name, will take over the heating and ventilating division. A. T. Holl is president, R. M. Spencer vice president, W. H. Lauer secretary and treasurer, and E. R. Reeves, T. R. Walker, T. H. Bell, A. T. English and F. E. Fisher have purchased interests.

MIRRORS of MOTORDOM

DETROIT

AUTOMOBILE production in January will exceed December. February, from all present indications, will increase over January. As motordom history has been written, the first month of the new year betters the last of the old in point of output, but February's gain over January is a better one.

Detroit is the scene of a sudden burst of post-holiday activity, from Ford and Buick notably, and temporarily encounters some difficulty in distinguishing between seasonal upturn and genuine recovery.

But, recalling the past, Detroit attaches more credence to the belief that the sudden burst of activity is for cars for stock-deleted dealers' showrooms and for the shows. To this, however, there are two exceptions.

Decks Cleared for Action

Chevrolet is one, continuing its lead in output and setting 70,000 to 80,000 cars as January's goal. Its dealers have long since been stocked, for production has been going on at a fast clip uninterrupted since November. On reliable authority, this unit of General Motors is actually selling its output.

Hudson-Essex, likewise, still goes ahead ambitiously. It continues with unchanged shipments and output, assembling slightly less than 1000 cars daily, and too, selling its production.

The rest, awakened from the lethargy of inventory shutdown, begin to take on some vestiges of life with rehabilitated production programs, yet still resort to the closest possible checkup on their dealers' stocks through comprehensive running inventory sheets. It may be literally said that if their present cautious trend continues, cars will be made after they are sold.

So begins 1931, decks theoretically cleared for action, with an estimate for the entire industry of 40 to 45 per cent fewer unsold cars in stock than at the corresponding time of last year.

Ford Resumes Ambitiously

Latest reports on Ford's January production place the figure at 63,000 cars.

Ford suspended until further notice all releases of heavier steel products just as the new year opened. Ford had been closed since Dec. 17 when on Jan. 5 he reopened his enameling, body assembly and final assembly divisions. Resumption generally was scheduled a week late, to begin Jan. 12, for the bulk of manufacturing activities.

Reliable reports say that raw and finished steel was stocked at Ford's enough for 30,000 cars as 1931 began.

Beginning Jan. 12, Ford proposes working three days a week, or in all, 12 assembly days for January, and has ambitiously defined 7000 cars as daily production.

But many believe this rate will be toned down in practice to average 5500 cars a day. Even so, that production will approximate double the scant 30,000 units constituting December's total, when Chevrolet ran to 60,000. Kelsey-Hayes starts up four assembly lines this week, presumably on Ford work.

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Ford cars in dealers' hands aggregate for the country a bare 90,000, or a good month's production.

Thus arises a question heretofore thought settled—will Chevrolet January production so far outshine Ford's after all?

The lean automotive months of 1930 have done one thing for sure. Predictions for 1931's aggregate auto production uncover a cautious characteristic common to all guesses.

The automobile world's suppliers of materials concur in conservatively estimating that 4,000,000 cars will be built this year, not an overly bullish average compared with 1930's actual 3,300,000 cars.

Of an approximate score of men well versed in the gyrations of automobile production, forecasts fluctuate surprisingly within a short range, from a high of 4,500,000 to a low of 3,800,000 units. Included in several guesses was a vision of a replacement market for 3,500,000 cars alone.

Again all agree in seeing better business in 1931, but the recovery will be mildly upward. And the real test will come in the last three quarters, of the year when the usual spring gains have spent themselves.

Unfortunately, the industry is tooled for 8,000,000 cars annually, but not a guess was so bold as even 5,000,000 cars for this year. Bullish sentiment seems conspicuously absent.

Chevrolet in Bold Stroke

Chevrolet will no doubt make 75,000 cars in January, gaining from the 60,000-unit mark of December. Its daily rate is indeterminable but its many plants will probably average 5 days weekly through the month. Accurate assembly figures, however, place the daily rate as the month began at 3000 to 3500 cars.

In February Chevrolet will make 84,000 cars.

With a peak of 32,000 employes at work in its various units, Chevrolet is in the midst of completing a bold stroke in beating the gun this season on new model introduction, and going bravely ahead producing for first quarter with the highest rate of all auto makers.

Various Fisher Body plants report business excellent and the Chevrolet foundry at Saginaw operates at a good rate.

Of the other General Motors lines,

Buick reopened on Jan. 5 with the addition of 1000 men to the 3000 employe force working before mid-December shutdown.

Heavier shipments of steel and steel products were scheduled to Buick for as early as Jan. 6 and Buick is known to initiate 1931 output with an increase of from 100 to 200 cars daily over the 500 a day, 4-day week schedule that prevailed before closing. Buick has announced intention to go to the syncro-mesh gear shift and torque-tube drive in its smallest model.

Buick, too, keeps close tab on its retail demand and a complete dealer inventory is taken every 15 days.

Cadillac-LaSalle resumed full time Jan. 5, having been down since Dec. 1. Employes numbering 6000 have been recalled, some added, and models come off the lines at a bettered rate.

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More attention is given the Cadillac 12 in production, the 16-cylinder model suffering at present from increasing dealer stocks. When Cadillac closed down for inventory Dec. 1 only approximately two-fifths of the intended production of 16's had been effected for the year ending March, 1931. Some 5000 models were scheduled for that period.

And now Marmon enters the race with a 16-cylinder car, aluminum alloy motor, and two new eights.

Oldsmobile works 100 daily, 4 days, and has come forth with its new six.

Oakland-Pontiac, on a 5-day week, has called back men, and likewise has introduced early-fall predicted new models with chromium-plate radiator grilles and syncro-mesh gear shift.

Olds also has adopted the syncro-mesh gear shift, which has now filtered down all General Motors cars except Chevrolet.

Steel Releases Gaining

Steel releases into the Detroit district have already started to come through at an increasing rate. As 1930 drew to a close, orders were being placed on the books in good volume to sellers here for outside mills. Releases on these in the main follow through the first few months of the year.

Possibly because of the proximity of the local Great Lakes mill, excellent orders for immediate shipment have been experienced. At its steelworks two open hearths ran even on New Year day and established a record day's pouring since the plant has been operating. There is possibility that a third furnace will be lighted.

Still deploring the bareness that exists in local manufacturing plants' inventories, steel suppliers wonder how much longer such reduced stocks can suffice, and point out that aside from any outside influences for the better, in many cases it would take from two to three months to re-establish normal stock inventory alone.

Hanna Furnace pig iron shipments have been the best in some time.

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Even though rumors have subsided somewhat on the possibilities of the new Ford eight, there is evidence of increased activity at the Highland Park plant embracing a transfer of some Model A and T manufacturing equipment from Fordson to the former plant, which leads to the belief that this is relative to the proposed eight.

Briggs now rents the old pressed steel division at Highland Park from Ford and there is some rumor that these holdings will be extended.

As yet there is no evidence of tooling for the multiple cylinder model and despite material releases on the new Lincoln, no evidence of either carefully camouflaged or blanket material orders.

The engineering laboratories are especially secretive. A rumor, unconfirmed, says upward of 300 8-cylinder motors have been produced at Ford's.

The time as yet may be deemed unpropitious for this new Ford's production, but much points to its possibility within the year.

Hinges Cause Holdups

Reo has been slowed further by the holiday influences, and latest reports place its production at about 50, 4 days. It is interesting to note that the longest wheelbase model at the New York show was a Reo, 14 feet long.

Hinge trouble on the new Reo body doors has held up some bodies and entailed rejections. Their manufacture was partially held up at Murray; the same difficulty has held up some Hudson-Essex body work at the same plant.

Studebaker introduces a new six equipped with free-wheeling, likewise have Auburn and Hupmobile incorporated the latter principle, but Auburn calls it "coaster control." There are now 19 different series of cars equipped with free-wheeling and judging from its wide-spread inception, opinion on the part of some ventures it may spread to the other makes similar to the way four-wheeled brakes did some time back.

Prior to Auburn and Hupp, Lincoln was the latest to adopt its use. This division, now on a new model, turns out 30 cars daily.

Willys-Overland works 4 days weekly, 300 daily, on three new models.

Chrysler does some better due largely to Dodge at 300, 5 days. Chrysler lines themselves produce approximately 100 daily, 3 days. DeSoto is rumored to have a new model.

Graham-Paige has resumed on a 6-day week with additional employes.

Franklin at Syracuse, will go into production in a few months on a 12-cylinder car.

Corrosion-resistant steel finds wider application on automobiles. Of all motordom's models, only Buick and Nash now are without a single corrosion-resistant steel part. Ford is perhaps the heaviest user in point of tonnage purchases.

General Motors is convinced of its merits but has taken the stand that each of its constituent subsidiaries may use corrosion-resistant steel in preference to chromium plated parts only if the cost is the equivalent. Here the corrosion-resistant steel seller runs into his difficulty.

However, new General Motors' models gradually adopt some corrosion-resistant steel parts. Chevrolet now has two, the new Oakland and Pontiac have three parts. Of the others, Pierce-Arrow has the most parts—over 200 to a model.

Corrosion-resistant steel producers set a goal of an average 35 to 40 pounds of their steel per car in the near future.

Use of Foreign Manganese Far Outstrips Domestic

Consumption of foreign manganese ore in American metallurgical plants in 1929 was 22 times larger than that of domestic ore, according to the bureau of mines. Slightly more domestic ferruginous manganese ore was used than that which was imported, while the domestic manganiferous iron ore was 20 times that of the imported. Actual tonnage of manganese ore and other manganese-bearing materials consumed follows:

	Tons	Per cent manganese
Domestic manganese ore	27,685	54.82
Foreign manganese ore	618,698	47.67
Foreign ferruginous manganese ore	115,664	23.77
Domestic ferruginous manganese ore	123,809	15.08
Miscellaneous domestic materials	165,035	13.89
Domestic manganiferous iron ore	1,000,000	7.65
Foreign manganiferous iron ore	50,505	6.65
Total	2,101,396	21.85

Of this total, equivalent to 918,124 tons of 50 per cent manganese ore, 70 per cent was used in making ferromanganese, 7 per cent in spiegeleisen and nearly 23 per cent in manganiferous pig iron. The manufacture of manganese metallurgical products imported into the United States is estimated to have required 165,000 tons of ore averaging 42.75 per cent manganese. Total manganese consumption in metallurgical plants in this country was equivalent to 1,059,000 long tons of 50 per cent manganese ore.

EDITORIAL

Poisoning the Public Mind Against the Steel Industry

MEMBERS of a small group of obstructionists in the United States Senate seem to take a keen delight in attacking the steel industry. If their criticism were based upon honest convictions formed from a knowledge of the facts, no one could possibly object to their remarks. But unfortunately the three senators who have been loudest in their denunciation of the steel industry have displayed little or no regard for the facts.

Several weeks ago Senators Norris and Walsh condemned the steel industry because of an announcement that a dollar-a-ton increase in certain steel prices was contemplated. The absurdity of the attack was readily apparent to everyone who knows anything about the history of steel prices, but in agricultural sections of the country, small town editors seized upon the senators' remarks with enthusiasm. Throughout the corn belt newspaper editors are telling their readers that the steelmakers are extortionists. The following, from the Burlington, Iowa, *Hawkeye*, shows how the senators are poisoning the public mind:

"The steel industry is without soul or conscience. It hears of a movement by government and others to stimulate the building industry and sees therein a chance to do something that savors of extortion, for it controls, absolutely controls, the production of steel in North America and the tariff wall effectually sustains it in exacting extravagant prices for its products. It is regrettable that the business and industrial life of our people should have been developed along lines of low cunning such as is here shown. . . ." etc., etc.

Intent May Be Harmless, But Results Are Destructive

We do not think that Senators Norris and Walsh expected that their remarks would stir up unwarranted hatred of the steel industry. But the effects of their thoughtless attack are just as bad as if they had set out maliciously to discredit the motives of the steel industry.

And now comes Senator Couzens, who says:

"During the past 10 years there has been no reduction in the price of rails by the steel companies to the railroads. I am informed that they have been paying $43 per ton for steel rail during all this period, while other steel products have been reduced on an average of 20 per cent.

"I am informed that approximately $90,000,000 have been spent by the railroads for steel rails and had that been reduced the same percentage as other steel products the saving of the railroads would have been $18,000,000."

In the foregoing Senator Couzens shows the same disregard for facts that was so evident in the attacks by Senators Norris and Walsh. Somebody told the senator from Michigan that the rail price had stood at $43 for 10 years, that the railroads spent $90,000,000 for rails and that the price of other steel products had declined 20 per cent. From these three tidbits of information he has constructed a charge of collusion and inefficiency.

Stabilized Rail Price Has Been Found Advantageous To Buyers

As a matter of record, the price of $43 dates from Oct. 1, 1922. It has been in effect eight years and three months. During that time prices of other steel products have fluctuated up and down numerous times. At the time the rail price was established structural shapes were $40 per ton; today they are $32, a decline of $8 or 20 per cent. But the senator does not know that three months after the rail price was fixed, all steel prices increased. During an extended period plain structural material was commanding $50 a ton while the railroads were buying rails—a highly specialized product—at $43 a ton.

Track bolts have been purchased at a fluctuating price—presumably the method Senator Couzens would advocate. On Oct. 1, 1922, the price was 3.85c. The average since that date has been 3.915c. In other words, the railroads would have been slightly better off if they had agreed to allow the 3.85c price to remain unchanged during the eight-year period.

The idea of stabilized prices for rails grew out of a 15-year period of trial when from May 1, 1901, to May 1, 1916, the price stood at $28, regardless of up and down fluctuations in other steel products. Moreover, the stabilized price has enabled the steelmakers and the roads to collaborate on many improvements in manufacture and service which would have been difficult in an unstable market.

It is time, we believe, when the paid servants of the nation who persist in holding up industrial reputations to public scorn, should be made to recognize their responsibilities. The good will of the public is valuable to the steel industry. It is won by hard work and adherence to honest principles of business. For public servants to try to tear down this good will without sufficient justification is unethical.

The Yearbook of Industry

How Readers May Derive the Greatest Measure of Value from Its Contents

READERS of STEEL probably have discovered by this time that the Jan. 1, 1931, issue—*The Yearbook of Industry*—contains more original material and affords a broader perspective of significant factors in the steel industry than any of its predecessors. We are convinced that anyone who will take the pains to study its advertising and editorial contents carefully will be richly rewarded for the effort.

To those thousands who have "made their first trip through the annual issue" (to use the words of one enthusiastic reader) and who have laid it aside awaiting the opportunity to read it more closely, we recommend the following features as being especially worthy of their attention:

Advertisements Afford New Ideas and Definite Information

In the nearly 400 advertisements of 350 companies is found a composite picture of progress and achievement seldom equaled in the single issue of a business paper. No user of steel and other materials and products for construction and manufacturing, purchaser of machinery, equipment and supplies, or prospective employer of engineering service can examine these pages of attractive advertising without discovering stimulating ideas or concrete information of direct tangible value to him in his business or profession.

New Lineups in Steel Industry May Affect Markets

Everyone knows that recent consolidations, purchases and other changes have created a new line-up of steel producing companies, but not all of us appreciate the significance of these new alignments. For instance, the first 10 companies in 1920 accounted for 71 per cent of the total ingot capacity of the country. Today, the leading 10 producers have 85 per cent of the total capacity. Also, do you realize that the funded debt of steelmaking companies range all the way from $3.31 to $23.64 per ton of ingot capacity? Or that recent acquisitions by leading producers are breeding new rivalries which are bound to exercise a marked influence on certain finished steel markets?

These and many other significant points are discussed in the article beginning on page 241.

New Worlds for Steel To Conquer in Next Decade

In the next decade the steel industry will witness numerous changes in the distribution of its product. During the past 10 years the railroads, automobile industry, building construction and oil, water and gas projects have been the four banner customers. Already the railroad and automobile domination as chief consuming groups has been threatened. But what of the future? Where are the most promising outlets for steel in the period from now until 1940?

You can find illuminating answers to these questions in two related articles: 1. "New Worlds for Steel To Conquer," beginning on page 245 and 2. "Building Industry Attains Leadership in 1930 as Consumer of Finished Rolled Steel," beginning on page 249.

The comparisons on page 248, showing consumption by leading groups for nine years, afford a significant hint as to what is going on in steel distribution. Perhaps it will help you to place the proper emphasis on your sales efforts in the various consuming markets.

Another distribution story, devoted to alloy steel, appears on pages 252-254. Here you will find that in spite of a serious decline in the output of many types of alloy steel, production of the 18-8 chromium-nickel alloys was greater in 1930 than in 1929. Moreover, you will be shown how

greater diversity in the application of alloy steel is making the industry less dependent on the automobile for consumption.

How Does Steel Selling Rate With Customers?

Here is a new departure in the editorial activities of a business publication for the steel industry. STEEL sought the opinions of customers as to the quality of steel salesmanship. The answers to a questionnaire issued by STEEL reveal many significant points. One is that as a class, salesmen of steel rate high, in the opinion of those who buy steel. But these customers find a few common faults in steel selling and they make a number of constructive suggestions. No president, sales manager or other high executive of a steel company should miss this article. Read it, apply the findings to your sales organization, and see if any of them fit!

Equipment Markets Are Charged With New Opportunity

The age of machine tools and railroad motive power in service is increasing, according to surveys recently made. From this it is clear that the replacement of old machinery by modern models is not progressing as rapidly or as extensively as is generally believed. Authorities see large potential markets in the replacement of obsolete equipment in American manufacturing plants. Even in the steel industry, where old mills are scrapped with rare abandon, there is opportunity for rehabilitation.

Anyone who is identified with the construction of equipment—from heavy mill units down to the smallest piece of shop machinery—will find food for thought, as well as some encouragement, in "Equipment Markets of the Future," on page 259.

Scrap Is Conserving Nation's Iron Ore Resources

Recently a well known financial publication presented an article in which the author expressed the opinion that the Lake Superior iron ore supply will be exhausted in a quarter of a century. STEEL's representative, who recently visited the ranges and who has studied the ore situation for many years, shows on pages 262—265 how absurd are predictions of an early demise for Lake ore. He shows that the influence of scrap in the steel industry is helping to conserve ore to a degree that is not appreciated generally in the industry. Twenty million fewer tons of ore are required in a good year because of the use of scrap.

World Steel Production Down, But Three Countries Gain

World production of iron and steel dropped sharply in 1930, but here and there were a few countries—three to be exact—where more steel was made in 1930 than in 1929. One of these was Russia, where great expansion in steel capacity is under way.

Read this article on pages 266 and 267 and then turn to page 343 for detailed reviews of what is going on in foreign iron and steel producing countries. These articles represent the most exhaustive treatment of the foreign steel situation to be found in an American publication.

STEEL'S Business Trend Gives Many Facts in Nutshell

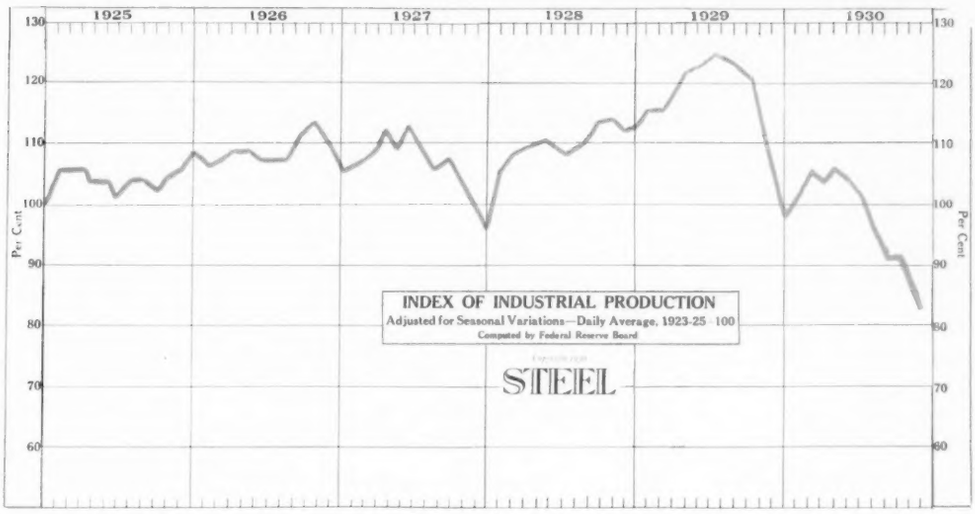
STEEL's Business Trend, beginning on page 271, gives you a wealth of information boiled down to the essence. One table alone, containing the 1930, 1929 and 1928 figures for leading business barometers, with the 10-year average as well, tells more about the business situation of 1930 than you can find in dozens of pages of text matter.

What The Country's Authorities Think of Engineering Progress

Engineering progress in 1930 was notable, in spite of the depression. In 19 pages, beginning on page 279, you will find composite word pictures of important engineering progress, based on the opinions of 60 of the leading technical authorities of the country. Welding, riveting, heat treating, machine tools, foundry practice, metal coating, rolling mill practice, steelworks processes, blast furnace operations and other phases of engineering and operating activity are discussed.

And in addition to all of these features, the *Yearbook* presents its usual complete tables of prices, production, comsumption, etc.

THE BUSINESS TREND



1929	
Nov.	106
Oct.	117
Sept.	121
Aug.	136
July	124

1930	
Nov.	84
Oct.	88
Sept.	91
Aug.	91
July	94

Business Starts New Year With Few Illusions

AMERICAN business is starting the year 1931 in a frame of mind which is far different from that with which it viewed the future a year ago. In January, 1930, the prevailing opinion was that industry was in for a slump—probably a minor depression. No one, it seems, had convictions that the recession would attain the proportions of a major setback.

Today business men are less reluctant to face hard facts. They have seen the situation go from bad to worse and have deferred hope so many times that they now find it easier to be patient. Therefore, it may be said that business in general, while hopeful and optimistic, now is prepared for a long upward climb before the highroad of complete recovery is reached.

Current business statistics reveal little that is new. Moreover, the weekly figures are clouded by the interrupting influence of the holiday season. The increased activity in many lines of industry, which really dates from Jan. 5, will not be reflected in the records until another week has passed.

Industrial Activity Low in Final Weeks of Old Year

In the meantime, the statistical picture of the old year is being rounded out by the monthly figures for November and December. As expected, the Federal Reserve board's index of industrial production fell from 88 in October to 84 in November. Automobile output in November, for the United States and Canada, dropped to the low figure of 134,844 units. Exports of iron and steel slumped sharply in the eleventh month, but imports registered a modest gain.

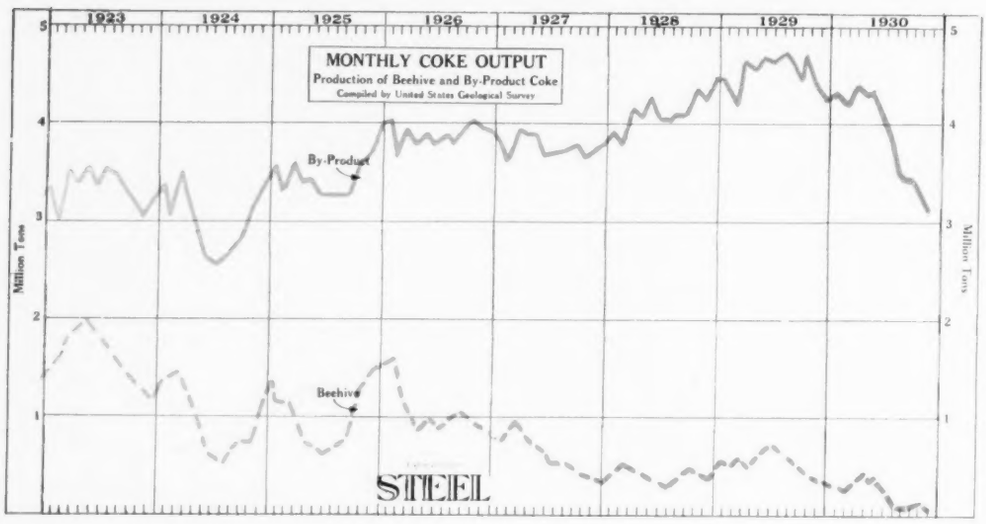
The records for December reveal a continuing trend toward lower levels. Pig iron production for the final month of the old year, according to preliminary returns, was at the daily average rate of 53,730 tons, the lowest since January, 1922. The lowest points since the World war were 27,892 tons in July, 1921; 58,408 tons in August, 1922, and 57,531 tons in July, 1924. The average daily output for 1930 was 86,720 tons, which is 92 per cent of the 10-year average—93,817 tons.

Commodity Prices Show Faint Signs of Firmness; Money Rates Lower

The volume of freight traffic in December adhered closely to the weekly trends in the corresponding month of 1929, but at a lower level. The percentages of gain or loss for each week were almost identical with those of the comparable weeks in the previous year.

Commodity prices have not changed appreciably, although since Jan. 1 a few products have firmed slightly. Copper has gained a fraction of a cent and wheat is firmer. Wholesale gasoline prices are stronger. In the meantime, STEEL's composite of 14 steel and iron products continues to hold at $31.66, which figure is 11.8 per cent below the level of $35.89 which prevailed a year previously.

Reduction of the rediscount rate of the New York Federal Reserve bank from 2½ to 2 per cent is an interesting recent development. The new rate is the lowest yet offered by the federal system and is somewhat below the rate of foreign banks. Its effect on business and upon stock and bond markets will be given more than usual attention by business and financial leaders.



By-Product

	Tons
November, 1930	3,137,110
October, 1930	3,431,529
November, 1929	4,321,494

Beehive

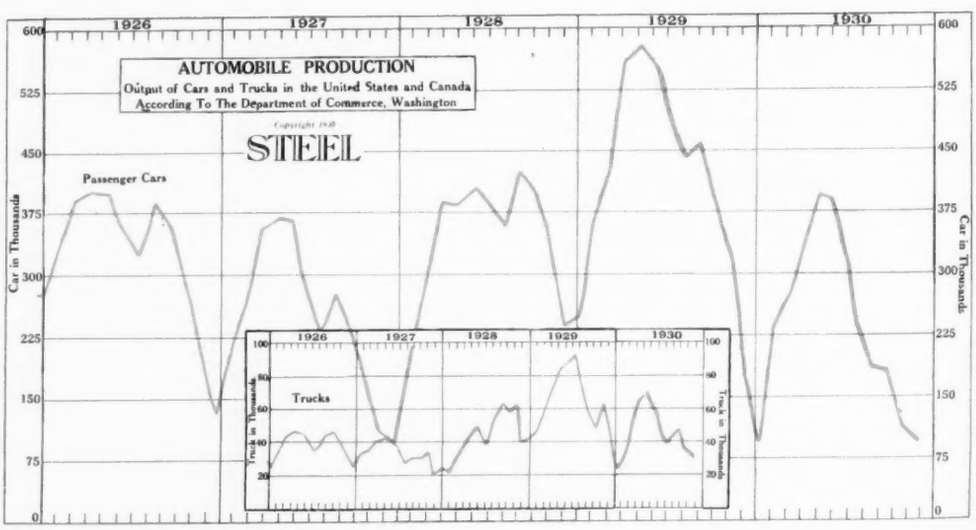
November, 1930	167,500
October, 1930	177,800
November, 1929	413,300

Further Cuts in Production of Coke Fail to Halt Increase in Stocks

In spite of the fact that production of coke was cut during November, stocks accumulated and reached 3,331,911 tons, another new high. Output of by-product coke amounted to 3,137,110 tons, or 104,570 tons per day, as compared with 3,431,529 tons or 110,694 tons per day in October, a drop of about 5 per cent. Beehive output declined from 177,800 to 167,500 tons during the month, but the daily rate made a slight gain. The retreat from the production schedules of 1929 is evident in comparisons with November, 1929, when 4,321,494 tons of by-product and 413,300 tons of beehive coke were produced, but it must be noted that as a year 1929 was the high point of a long, steady increase in output.

November Automobile Production Again Makes New Low

Curtailment of automobile production in the United States and Canada brought the total output to a new low in November, at 134,844 cars, of which 101,664 were passenger cars and 33,180 were trucks. Production was 12.7 per cent under that of October, 154,585 cars, and 59.5 per cent under that of November, 1929, when 226,997 were made. Eleven-month figures for 1929 and 1930 show a decrease of about 40 per cent. The cessation of major activity which takes place at the end of the year will cut December's output, and preliminary estimates for the United States range from 125,000 to 130,000 cars. A low was established in December, 1929, when 125,502 cars were produced in the United States and Canada.



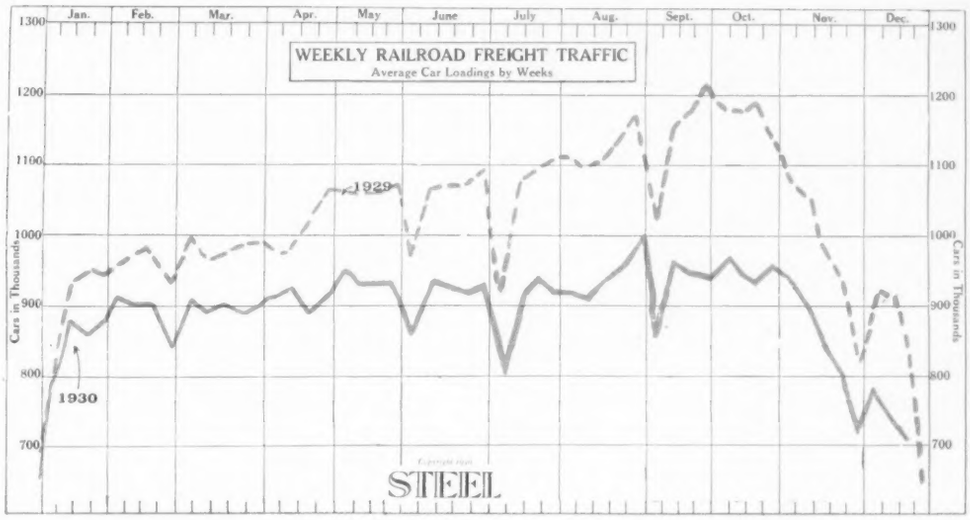
Passenger Cars

	1930	1929
Nov.	101,664	176,629
Oct.	116,006	328,305
Sept.	186,575	375,046
August	194,234	452,857
July	231,256	439,598

Trucks

	1930	1929
Nov.	33,180	50,368
Oct.	38,579	66,235
Sept.	44,309	54,683
August	38,606	59,985
July	41,295	78,703

1930	
Dec. 20	713,810
Dec. 13	744,443
Dec. 6	787,173
Nov. 29	702,085
Nov. 22	779,757
Nov. 15	829,251
1929	
Dec. 20	842,775
Dec. 13	922,861
Dec. 6	936,825
Nov. 29	836,310
Nov. 22	949,716
Nov. 15	982,926

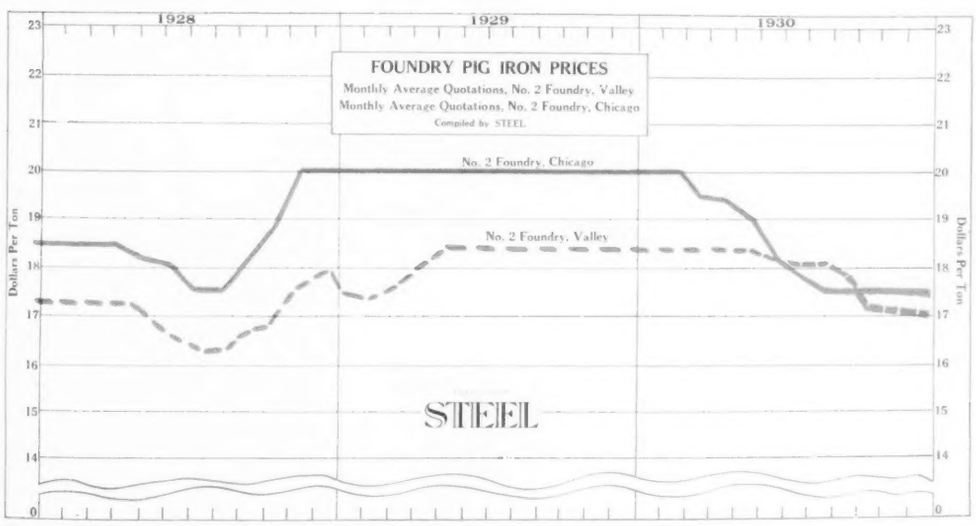


Freight Car Loadings Decline, Following Seasonal Trend

Revenue freight traffic during the major portion of December was marked by the tenacity with which loadings combated severe seasonal declines. The drop was from 787,173 cars for the week ended Dec. 6 to 744,443 cars for Dec. 13, and thence to 713,810 cars for Dec. 20. After passing a low mark during Thanksgiving week loadings gained 12.1 per cent; the corresponding gain in 1929 was 11.5 per cent. In 1930 the second week of December fell 5.42 per cent below the first, and the third week 9.32 per cent below the first. In 1929 the second week was 1.11 per cent under the first, the third week was 9.69 per cent below the first, and the final week was down 31.58 per cent.

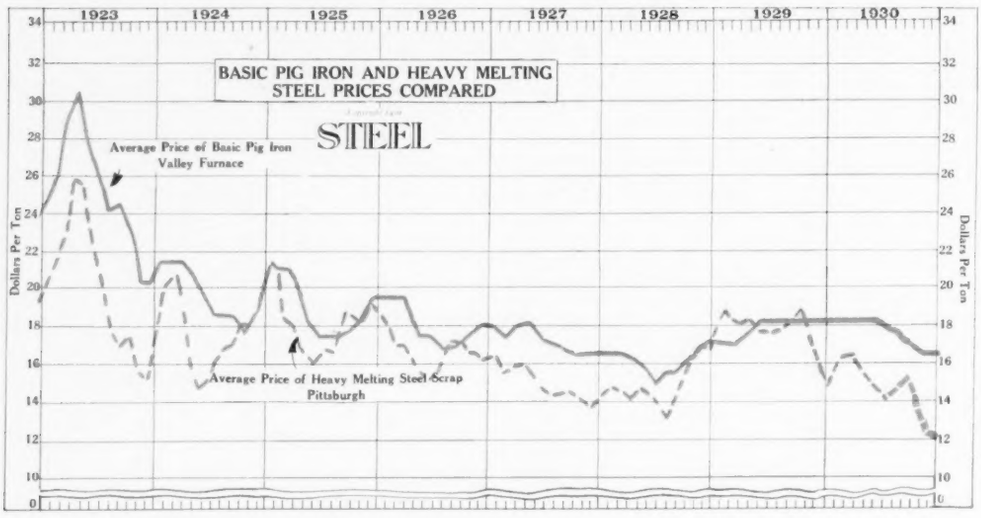
Foundry Pig Iron Prices Maintain Positions in December

The situation in foundry pig iron prices was unchanged during the last month of 1930 as No. 2 foundry, valley furnace, held at $17. Quotations for No. 2 foundry, Chicago furnace, maintained the level of $17.50, established last August. The Chicago price at the beginning of the past year was $20, having been unchanged since November, 1928, and valley quotations were $18.50, after having risen to that point in May, 1929. The first break came at Chicago in March and by August the price was down to $17.50. Valley quotations held until June and at midyear were above the Chicago figure, finally dipping below after the latter price settled to the present level.



Monthly Averages

	No. 2 Foundry Chicago	Valley
Dec., 1930	$17.50	$17.00
Nov., 1930	17.50	17.00
Oct., 1930	17.50	17.20
Sept., 1930	17.50	17.87
Aug., 1930	17.50	18.00
July, 1930	17.90	18.00



Basic Pig Iron

	1930	1929
Dec.	$17.00	$18.50
Nov.	17.00	18.50
Oct.	17.20	18.50
Sept.	17.75	18.50
Aug.	18.00	18.50

Heavy Melting Steel

Dec.	$12.75	$15.10
Nov.	13.20	16.30
Oct.	14.40	17.30
Sept.	15.70	18.45
Aug.	15.19	18.90

Steel Scrap Price Falls Farther Below Pig Iron Quotations

Scrap quotations continued in December to go lower, but pig iron managed to hold steady. Heavy melting steel, Pittsburgh, averaged $12.75 for the month, a new low since September, 1921. Basic pig iron, valley furnace, held at $17. In December, 1929, basic pig iron was $18.50. The decline in the price of pig iron began in July and continued gradually until the present quotation had been reached. Heavy melting steel has been subjected to fluctuations in its downward course, which started with a break from $18.90 to $15.10 between August and December, 1929. A recovery brought the price to $16.90 in February, 1930, but by July it was down to $14.90. August and September were the last months to show gains.

Composite of Steel and Iron Prices Ends 1930 at Low of $31.66

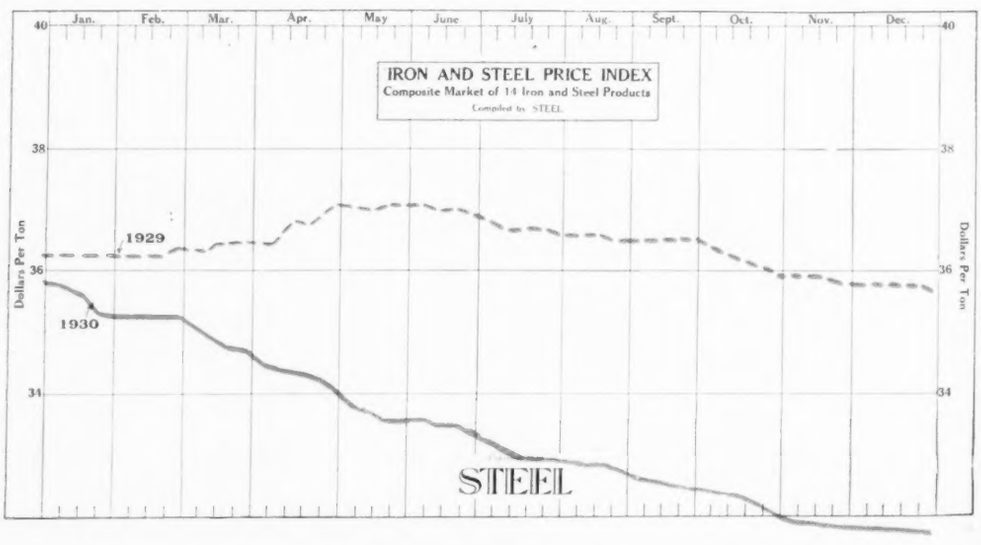
STEEL's composite of 14 iron and steel prices finished 1930 at $31.66, unchanged during the final week. On Dec. 24 a drop from $31.68 was due to a decline in foundry pig iron at Philadelphia. The index established new lows for the year and the month of December. On Dec. 25, 1929, the composite stood at $35.89 and the decline from this figure was practically continuous, except when it stood at $35.24 for the entire month of February. An increase tentatively expected to develop through finished materials at the beginning of the first quarter may be postponed until forthcoming demand has had a full opportunity to test prices. The recession in the index during 1930 amounted to about 11.8 per cent.

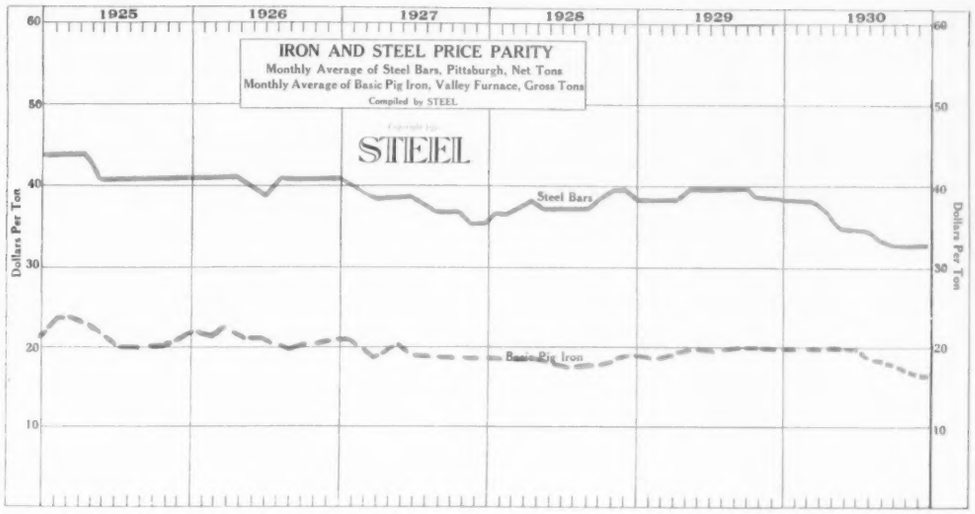
Weekly Figures

Dec. 31	$31.66
Dec. 24	31.66
Dec. 17	31.68
Dec. 10	31.84
Dec. 3	31.84
Nov. 26	31.86

Monthly Averages

December	$31.74
November	31.92
October	32.26
September	32.65





Steel Bars

	1930	1929
Dec.	$32.00	$38.00
Nov.	32.00	38.00
Oct.	32.00	38.00
Sept.	32.00	39.00
Aug.	33.00	39.00

Basic Pig Iron

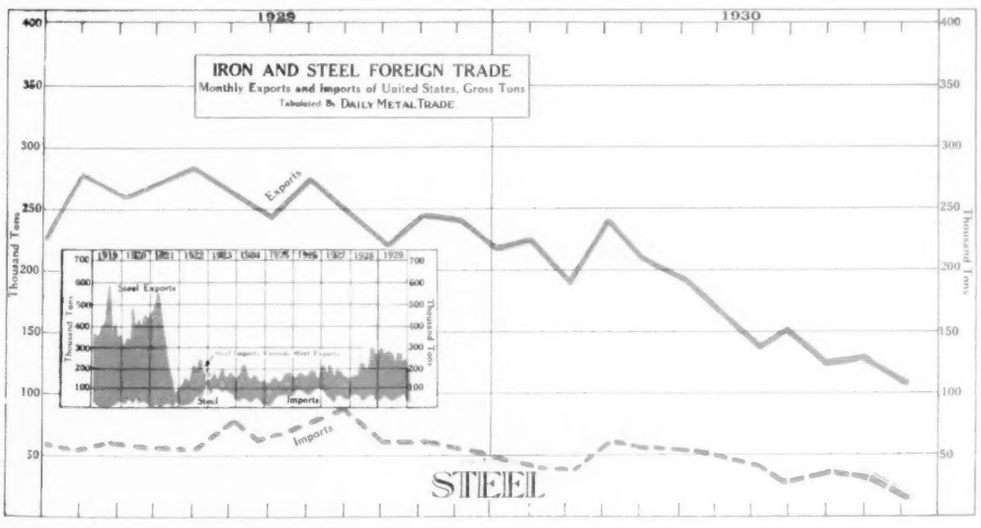
Dec.	$17.00	$18.50
Nov.	17.00	18.50
Oct.	17.20	18.50
Sept.	17.75	18.50
Aug.	18.00	18.50

Steel Bar and Pig Iron Prices Hold Steady in December

Average quotations for steel bars, Pittsburgh, and basic pig iron, valley furnace, for December remained unchanged from November levels. Steel bars continued at $32 for the fourth consecutive month, and pig iron has not changed since mid-October. In December, 1929, pig iron was quoted at $18.50 and steel bars at $38. As steel bars ended the fourth quarter with the prospect of a test of announced advances in the first quarter of 1931, there was a moderate carryover of contracts based upon $32, which may delay temporarily the price test. Apparent stabilization of pig iron prices at the end of the year has been accompanied by the placing of about half of the expected amount of first quarter tonnages.

November Exports of Iron and Steel Decline Sharply, Imports Gain

Iron and steel foreign trade during November was marked by a decisive drop in exports. The total for the month was 111,968 tons, the lowest monthly figure since early in 1925. In October 131,850 tons were exported. Imports, amounting to 43,095 tons, registered the greatest activity since June. An increase in pig iron imports and a decrease in the outward movement of scrap were largely responsible for the trend. For eleven months of 1930 iron and steel exports were 1,883,037 tons and for the same period in 1929, 2,817,110 tons, the decrease being 33.2 per cent. Imports during the eleven-month period of 1930 totaled 492,499 tons, a decline of 28.7 per cent from the 1929 period.



Exports

	Tons
Nov., 1930	111,968
Oct., 1930	131,850
Nov., 1929	241,829

Imports

Nov., 1930	43,095
Oct., 1930	38,344
Nov., 1929	54,041

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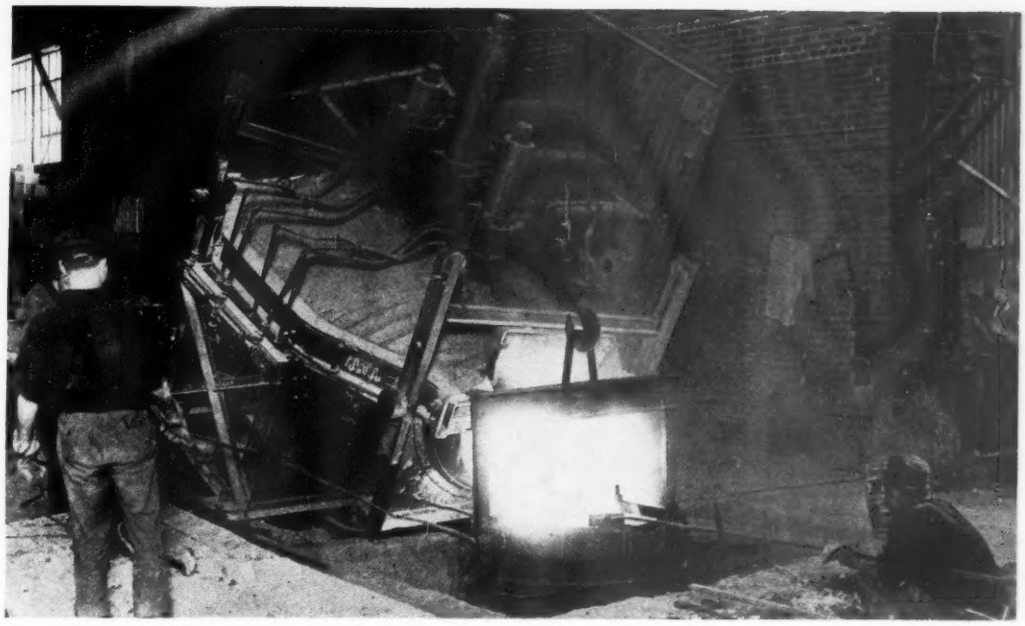


Cast Chromium Steels in Wider Use

Electric Furnace Melting Processes Used for Corrosion-Resisting Alloys

BY H. D. PHILLIPS
Consulting Metallurgist, West Lawn, Pa.

HEAT and corrosion-resisting alloys of chromium and iron, or chromium, nickel and iron, generally fall into three distinct groups or classes, as follows: Ferrites, with but little carbon, being malleable and employed with but little heat treatment; martensites, nonmalleable, being used after hardening; and austenites, solid solution alloys of iron, nickel, chromium, carbon, and at times silicon, which are malleable even after quenching.

These alloys have a high resistance to nitric and phosphoric acids, and generally fall within separate price scales. They are applied extensively in the chemical and process industries in the form of castings and their use is increasing rapidly.

Steel may be strengthened by the addition of one or more alloying elements but in doing so we must regulate closely the accompanying carbon content. Each one of the alloying elements has its own idiosyncrasies. It may be inexpensive or costly, domestic or imported, easy or difficult to handle, and it confers quite definite properties upon the steel. Some of the alloying elements go together, giving a much more acceptable result than either alone. In the heat and corrosion-resistant field for steel castings, generally but two elements and their effect upon the carbon present, merit consideration—chromium and nickel. As chromium is added to steel up to the stainless analysis (12 to 14 per cent) and beyond, it does several significant things: First, the amount of carbon held in the eutectoid composition is reduced materially; second, the critical temperature is raised; third, the rate of carbon diffusion through the metal is diminished rapidly, slowing down also the rate at which casting strains can be removed by heat treatment; fourth, the steel with the lower ranges of chromium has the property of air hardening.

While in a plain carbon steel the eutectoid composition is about 0.90 per cent carbon, in a steel containing 12 per cent chromium it will be about 0.30 per cent carbon. As an example, a steel with 0.50 per cent carbon and 12 per cent chromium will contain relatively as much free cementite as a plain carbon steel of 1.40 per cent carbon. Under the microscope, chromium steel displays a character-

Table I

Chemical Analyses of Six Alloy Steels

Alloy No.	Carbon Per Cent	Chromium Per Cent	Nickel Per Cent	Manganese Per Cent	Silicon Per Cent	Copper Per Cent	Molybdenum Per Cent
1	Under 0.15	12.00 to 14.00	Under 0.50	0.40 to 0.50	0.40 to 0.60	Under 0.30	None
2	Under 0.25	17.00 to 19.00	Under 0.50	0.40 to 0.50	0.40 to 0.60	Under 0.30	None
3	Under 0.30	21.00 to 23.00	Under 0.50	0.40 to 0.50	0.40 to 0.60	0.75 to 1.25	None
4	Under 0.35	25.00 to 30.00	Under 0.50	0.40 to 0.50	0.40 to 0.60	Under 0.30	None
5	Under 0.20	17.00 to 19.00	7.00 to 9.00	0.40 to 0.50	0.90 to 1.25	Under 0.30	Trace
6	Under 0.30	10.00 to 12.00	22.00 to 24.00	0.40 to 0.50	0.90 to 1.25	Under 0.30	1.00 to 1.50

istic pearlite grain structure enclosed in an envelop of free cementite. The chromium is present in both the ferrite and cementite, being in solution with the ferrite and forming at the same time a complex iron-chromium carbide.

High Temperatures Involved

Chromium, in raising the critical temperature, necessitates a higher temperature to relieve casting or working strains. For the heat treatment to be effective, it must be held at the higher temperature for a longer time than would be the case with a plain carbon steel. Chromium has the effect of diminishing the rate at which the carbon diffuses through the metal. In the 12 to 14 per cent and up to 18 and 20 per cent chromium range, the steel has the property of air hardening when the carbon is in excess of 0.10 per cent. This can be understood easily by remembering the slow rate of carbon diffusion and likewise precipitation in the chromium steels.

Whereas chromium raises the recalescence points in carbon steels, nickel has the opposite effect, depressing the critical points, and according to the degree of such depression, three groups of nickel steels may be considered: Pearlitic steels, which have normal transformation and heat treatment, or critical ranges, and are in a general sense similar to ordinary carbon steels; martensitic steels, self-hardening but too brittle to be of any great commercial importance; and austenitic steels, which are not susceptible to hardening by thermal treatment. The nickel and carbon content of the steel determines its places in any one of the above groups. An accompanying diagram according to Guillet gives a classification of different compositions of nickel steels.

Nickel dissolves in the ferrite of steel and increases the hardness and strength without the usual corresponding loss of ductility. It exerts an influence on the grain size of ferrite and pearlite and tends to produce a finer grain structure and finer pearlite. In the same sense nickel diminishes the rate of grain growth within the heat treatment temperature ranges, and thus minimizes the danger of overheating during heat treatment.

As nickel is added to a low-carbon steel, the critical temperature is dropped lower and lower until 25 per cent nickel is reached, when the allotropic transformations occur below atmospheric temperatures. The steel ordinarily does not cool to the point where the solid solution decomposes, and the alloy has an austenitic composition, or the carbon is still in solid solution in the ferrite and the critical transformations do not take place.

When chromium is added to a nickel steel, the same occurrences as mentioned previously are observed, except that in the presence of chromium much less nickel is required to suspend the critical transformations than when chromium is not present. Most of the nickel present is in solution with the iron, or with the chromium and iron, in a nickel-chromium steel, but a small part of it is probably combined with the iron-chromium carbide which in turn is dissolved inextricably in the nickel-chromium-iron matrix.

Secure Desired Properties

When nickel and chromium are present together, the good properties of each are enhanced by the other. While the nickel steels above 25 per cent nickel are austenitic, chromium up to 30 per cent will not produce an austenitic alloy. By an addition of nickel to a high-chromium steel, the metal is changed to the austenitic structure and likewise, as has been mentioned, an addition of chromium to a nickel alloy not quite high enough in nickel to be austenitic, renders a change in the metal structure to the austenitic type. The desired results are accomplished by properly proportioning the alloys present.

Austenitic alloys are fine grained, strong, tough, ductile, and nonmagnetic, and if desired can be made more ductile by heating to a high temperature of 2000 to 2100 degrees Fahr. and quenching in water. In the cast structure of these metals usually there is some martensite present, which has separated out due to the long slow cool from casting tem-

Valve parts of 18-8 chrome-nickel steel, for high-temperature crude oil distillation apparatus (left). Sulphuric acid solutions have little effect on the two nozzles (center) of high-chromium-nickel alloy steel. The small buckets (right) are for handling hot copper sulphate solution and are cast from 25 to 30 per cent chromium alloy steel

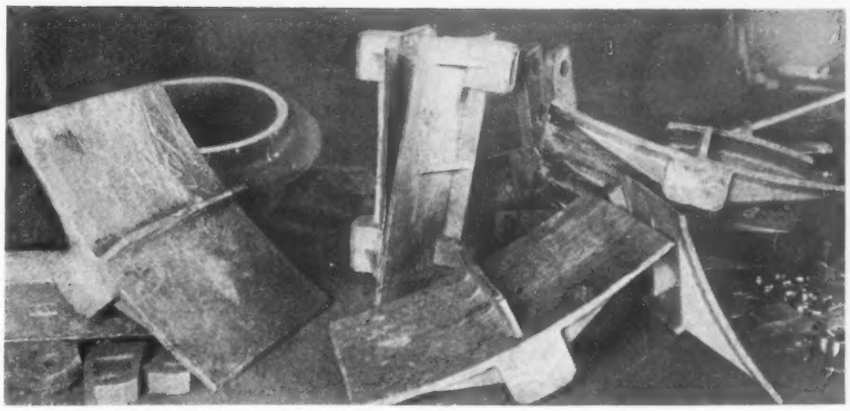
peratures, and the heat treatment and quench restores this to its austenitic condition.

The amount of carbon present in a high-chromium or chrome-nickel steel is important. However, these alloys are perhaps more sensitive to small changes in the carbon content than is the case with a plain-carbon steel. The resistance to corrosion and machinability both are increased by keeping the carbon down. The reason for the increased machinability can be realized easily when the high affinity of chromium for carbon is considered.

Of the chromium available in the steel, some of it, as has been explained previously, forms a complex carbide with the iron, the remainder goes into solution with the iron. It has been shown that to bring about resistance to attack under ordinary atmospheric conditions, a minimum chromium content of approximately 11.50 per cent is required in the ferrite constituent of the steel. With about 0.10 per cent carbon and a chromium content of 12 to 14 per cent, a properly made, clean rustless iron is substantially rust proof under ordinary atmospheric corrosive conditions.

Complex Carbide Forms

If the carbon content is increased to 0.25 to 0.30 per cent for the purpose of obtaining greater hardness, or for reasons of economy, sufficient carbide of chromium or complex carbide of iron and chromium could be precipitated to destroy the rustless quality so that nothing short of a quench from high temperature prevents precipitation of the carbides and consequent robbing of the solid solution of sufficient chromium. For a given low-carbon content of approximately 0.10 per cent, the corrosion resistance of these alloys increases with the chromium content, but the hardening capacity within certain limits decreases with an increase of chromium.



Liners for a chemical mill, cast from a 25 to 30 per cent chromium alloy steel made in the electric furnace

High-carbon chromium steels with carbon up to 0.80 per cent give good service in withstanding oxidation at high temperatures and seem to be practically as good as the lower carbon chromium steels in that particular field of service. The foundryman prefers the higher carbon steels, as they possess greater fluidity and thus ease the casting problem to some extent.

A general idea of the physical properties of a few of the chrome and chrome-nickel steels may be obtained by referring to Tables I and II. Ability to withstand a specific type of service is not indicated necessarily by physical test results which usually indicate nothing but the maximum strength with the minimum ductility, and its extreme, the maximum ductility with the minimum strength. The intermediate values largely are left to be conjured, but it is believed that a more thorough understanding of the alloy is made possible by giving the results of physical tests.

The electric furnace now is claimed to be the best and most economical means of producing high chrome and chrome-nickel alloy steels, conforming to close chemical and physical requirements on a production basis. Either acid or basic practice may be used in making these steels but the acid electric furnace seems to be used more extensively than the basic furnaces.

Chromium Oxidized in Melt

In the basic electric melting practice for these steels, if any of the return scrap or scrap containing large percentage of chromium is used, it is best to make up the remainder of the charge with low-phosphorus scrap so that slagging off will not be necessary. A large amount of the chromium is oxidized during melting and thus would be lost if the first or oxidizing slag were removed. With the one slag

Table II

Typical Physical Properties of Six Alloy Steels

Alloy No.	Maximum Endurance Temperature Degrees Fahr.	Tensile Strength Pounds Per Square Inch	Yield Point Pounds Per Square Inch	Elong. in 2 in. Per Cent	Red. of Area Per Cent	Brinell Hardness	Shrinkage Per Ft. Inches	Weight-Lbs. Per Cu. In.	Melting Point Degrees Fahr.
1	1200	65,000 to 75,000	45,000 to 55,000	15.0 to 18.0	20.0 to 30.0	166	¼	0.28	2725
2	1600	70,000 to 80,000	45,000 to 55,000	12.0 to 15.0	16.0 to 18.0	207	¼	0.28	2730
3	1800	55,000 to 65,000	40,000 to 45,000	4.0 to 8.0	8.0 to 10.0	183	¼	0.28	2760
4	2000	50,000 to 60,000	35,000 to 40,000	2.0 to 5.0	2.0 to 5.0	183	¼	0.28	2800
5	1800	80,000 to 90,000	40,000 to 50,000	45.0 to 55.0	40.0 to 50.0	166	11/32	0.285	2675
6	1800	75,000 to 85,000	45,000 to 55,000	22.0 to 28.0	25.0 to 30.0	159	11/32	0.29	2700

process the basic furnace can be speeded up greatly and more adequately meet the demands of the foundry. The increased cost of the low-phosphorus scrap is offset many times by the savings in alloy charged, power and time.

Light turnings and other excessively light scrap generally are avoided and as a rule at least one-third of the charge is fairly heavy scrap such as heads and gates. Ordinary basic melting practice is followed with the exception that the first slag is made the deoxidizing and desulphurizing one. The slag is treated with coke dust until properly deoxidized, the alloy added, and the metal tapped. The heat should not be tapped if the slag shows even a faint apple green color, as this is a sure indication that chromium is still in the slag. Further additions of coke and lime should be made until the slag shows its usual gray, powdering condition. All additions of ferrochromium generally are made when the bath is melted completely and the carbide slag has formed.

In the acid process no great reduction can be accomplished, and unless great care and control are exercised in melting, the chromium losses may be high. Light scrap and turnings should be avoided, as in basic practice, and it is as a rule good practice to seal the furnace during melting down. All delays during the melting period should be avoided and this in turn reflects upon the furnace. The melting-down period is the only opportunity for *making time* without effecting the final product.

Losses of chromium in making high-chromium steels may vary in different foundries. In a properly operated basic furnace, the chromium losses should not exceed 4 per cent, while in a properly operated acid furnace they should not exceed 6 per cent. The values given represent the percentage of the total chromium added and not the percentage of chromium in the steel, as in the latter case a loss of 5 per cent chromium in a 20 per cent chromium steel would represent an alloy loss of 25 per cent. The loss of nickel in either practice is practically nil, and in only rare cases is less than a 95 per cent recovery of the element obtained in the steel.

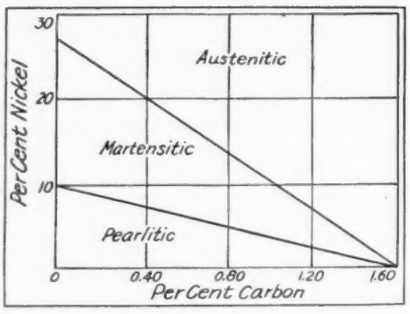


Diagram showing structural classification of nickel steels according to Guillet

It is extremely hard to judge the temperature of these metals and one experienced in judging temperatures of ordinary steels is quite sure to estimate or read low in attempting to ascertain the temperature of a high chromium or a chrome-nickel steel. It is desirable, though seldom practical, both from the viewpoint of the mold and the quality of the metal, to cast on the low side or low temperature, but due to the high casting temperatures generally found and usually necesary, a highly refractory sand is needed.

Valve parts exhibiting high resistance to corrosion and high temperatures, cast from 18-8 *chrome-nickel steel*

The readiness with which an oxide or scum forms on the surface of a chrome or chrome-nickel alloy is a source of much trouble to the foundryman. This oxide forming on the surface of the metal evidences itself in the ever present trouble with cold shuts. These cold shuts are really only skin deep and though unsightly are no serious detriment to the casting. The chromium bearing metal forms a protective coating on the surface of the metal, protecting that underneath. That scum or covering is quick in forming so that when two streams of metal meet in the mold a cold shut or wrinkle is formed on the surface of the casting.

The wrinkle is not serious because the heat and pressure of the bodies of metal causes a perfect union and the oxide is forced to the surface where the chilling action is most pronounced, merely causing a surface defect.

Usual steel foundry pouring practice is employed in handling any of these metals. In both basic and acid practice, trouble is sometimes encountered with the slags in the ladle, but as has been mentioned before, with careful intelligent furnace operation, there will be little loss of chromium into the slag. The loss of chromium forms the troublesome constituent of the slag, chromic acid. Slag low in chromium can be handled as in ordinary steel heats.

High losses of chromium affect the cost of the metal, not only from the point of increased alloy additions necessary to obtain the requisite percentage, but also cause much trouble in the furnace and ladle by building up the bottom of the furnace and by causing frequent relining of the ladles.

Once the slag is in proper condition the metal either may be poured direct from a lip-pour ladle or poured into 50 or 100-pound ladles for pouring small castings. If a tea-pot or bottom-pour ladle is used, the precautions to be taken with the slag will not be necessary. The next consideration is the pouring or casting temperature of the metal.

Pour at Low Temperature

Whenever practical, it is desirable to pour the metal into the mold at the lowest temperature consistent with the proper filling of the mold cavity. The casting temperature affects the final quality of the metal in many ways, and especially in the higher chromium series of steels the evil effects of high casting temperatures are pronounced.

Even with low casting temperatures, large grains are found in heavy metal sections, caused by the slow cooling from the initial casting temperature. At present there is no way known by which those large grains can be prevented, and heat treatment exerts but little influence upon them. These large grains are particularly objectionable in castings to be used for pressure work, as it may be seen that any seepage follows the grain boundaries. The formation of large grains is not to be dealt with in the lower chromium content steels or in the chrome-nickel steels, but even so, the casting temperatures should be controlled carefully.

Next to correct composition, the most important factor in securing best results from alloy steels is proper heat treatment. As a rule all castings of these metals should be cleaned completely, and, whenever necessary, welded before heat treating.

In the 12 and 14 per cent chromium steel, if maximum softness is not desired, it can be annealed or rather tempered below the critical temperature. In that case it is heated to from

1250 to 1300 degrees Fahr. and cooled in air, while if maximum softness is desired it should be heated to from 1500 to 1550 degrees Fahr. and cooled slowly in the furnace, the temperature drop not exceeding 50 degrees Fahr. per hour to a point below the critical temperature. The 17 to 19 per cent chromium steel also may be softened by heating to 1300 degrees Fahr. and cooling in air. Maximum softness may be obtained by heating to from 1450 to 1500 degrees Fahr. and cooling in air or water. The water quench gives slightly greater ductility.

The higher chromium steels of the 21 to 23 and 25 to 30 per cent analysis should be heated to 1600 degrees Fahr. and thoroughly soaked at this temperature for at least 12 hours and cooled quickly in air or water. The water quench is to be preferred as it diminishes the grain size. The length of time at which these steels are held at heat to relieve casting strains and to effect complete annealing will be considerably longer than with an ordinary steel casting.

Heat Treating Advisable

In many cases the austenitic alloy castings are not heat treated, though where no great danger to the casting is involved they should be heat treated. A greater ductility may be obtained by heating them slowly to 1200 degrees Fahr. and then rapidly to 2100 degrees Fahr., thoroughly soaking them at this temperature, and then quenching in water. This treatment changes all the martensite formed in the slow cool from casting temperatures into a desired austenitic structure.

The lower chromium series of steels may be hardened by quenching in air, oil, or water from a temperature above the critical range and then tempered to the desired hardness, much the same as a carbon or low alloy steel. However, as the chromium increases this property is lost, unless the carbon is increased to a proportionally higher degree. Resistance to abrasion may be secured by a high-carbon, chromium alloy consisting of an iron-chromium-carbide dissolved in an iron-chromium matrix. Such an alloy is resistant to extremely abrasive conditions but, as can be imagined, is extremely difficult to machine. The chromium steels, much like the carbon steels, have a distinctly graduated range of properties caused by variations in the carbon or chromium content. They have, however, a greater diversification of uses.

As is characteristic of all austenitic alloys, the nickel-chromium steels work-harden readily, and it is really the only manner in which they can be hardened.

A hardened chromium steel with a martensitic sctructure is much more resistant to corrosion than one with a thoroughly annealed pearlitic structure. The chromium and the carbon are all in solution in the ferrite while in the martensitic state, and the alloy is therefore more homogeneous.

Embrittlement of Galvanized Shapes To Be Studied

An investigation of the causes of occasional embrittlement of hot-dipped galvanized structural steel and means of preventing the occurrence of such embrittlement will be carried out by a subcommittee of the American Society for Testing Materials at Battelle Memorial institute, Columbus, O. The investigation is to determine the causes of the embrittlement; to secure data as a basis for specifications for material or treatment suitable for hot-dip galvanizing, depending upon the results of the research; and to formulate practical shop tests for detecting embrittlement. The placing of this project at Battelle has brought the society into co-operative relations with the Utilities Research commission, which had already placed a similar project at the institute.

Underfires Ovens with Blast Furnace Gas

Recent installation of two 30,000 cubic feet disintegrator gas washers at the blast furnace department of the Weirton Steel Co., Weirton, W. Va., has permitted the use of this gas for underfiring coke ovens thereby releasing the entire surplus of coke oven gas from Nos. 2 and 3 batteries for firing heating furnaces in finishing mills.

The new 28-inch rail and structural mill recently completed, is designed to produce rails, tie plates, slice bars, I-beams and channels up to 15 inches, angles up to 8 x 8 inches, squares and rounds up to 6 and 7 inches, flats up to 24 inches and other structural and merchant sections. Initial operations disclosed the mill to have a monthly production rating of 15,000 to 18,000 tons.

To Study Lubrication

A fundamental study of lubrication in respect to metal drawing and its proper application to modern practices is to be undertaken at Battelle Memorial institute, Columbus, O., under the sponsorship of the Ironsides Co., Columbus, O. Dr. Robert C. Williams, a specialist in colloidal chemistry with wide experience in this field has joined the institute staff. He will be in charge of this program of research work under the direction of Dr. H. W. Russell, chief physicist of the institute. The Ironsides company, which established the research project, has been engaged in the manufacture of special lubricants for 40 years.

Foundrymen Plan Southern Regional Meeting

Cupola practice, high-test cast iron, and sand control, will be the principal topics discussed at the American Fopndrymen's association Southern Regional meeting to be held at Hotel Tutwiler, Birmingham, Ala., Jan. 20-21. Local industries and foundrymen of the district have been co-operating to provide all the details required for a well-rounded program. The first day will be devoted to the presentation and discussion of foundry problems, while the second will be occupied with inspection trips to foundries in the district. The program of papers is as follows:

Tuesday, Jan. 21

MORNING

Session on high-test cast iron and cupola practice. Chairman: J. T. MacKenzie, American Cast Iron Pipe Co., Birmingham, Ala.

Cupola practice—A discussion of American Foundrymen's association committee recommendations for the operation of 54-inch cupolas.

High-Test Cast Iron—Leader: H. Bornstein, Deere & Co., Moline, Ill.

AFTERNOON

Session on practical sand control.

Fundamentals of sand control—Leader: H. W. Dietert, U. S. Radiator Corp., Detroit.

Sand control in a pipe foundry—Leader: Max Juniansky, Lynchburg Foundry Co., Radfor, Va.

Foundry costs.

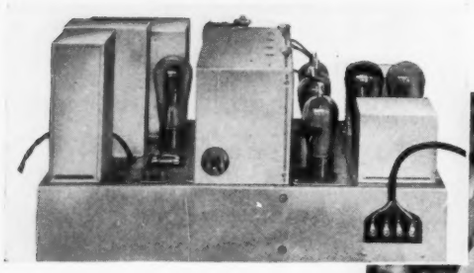
Fundamentals in determining costs of casting production.

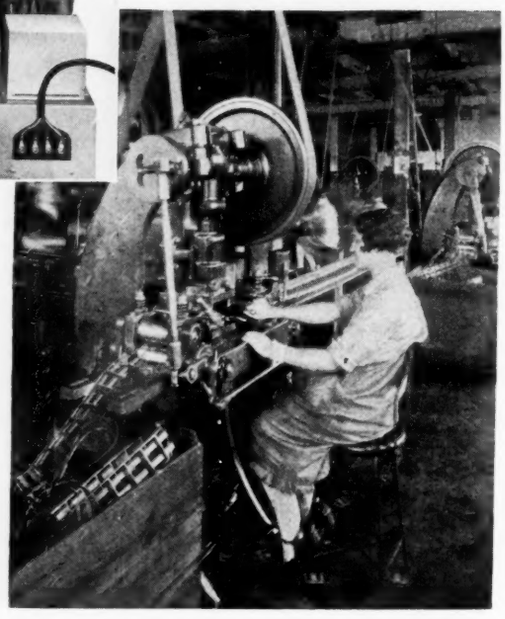
Copper-Bearing Steel Pipe Used in Flying Cage

In the description of the new Bronx Zoological park flying cage for captive birds described on Page 46 of the Dec. 25 issue of STEEL, it was stated erroneously that the copper-bearing steel pipe used in the framework was made by the Youngstown Sheet & Tube Co. This pipe, comprising some 38,000 pounds, containing 0.2 per cent copper and ranging from 1 to 3½ inch inside diameter, was manufactured by the Republic Steel Corp., Youngstown, O. All pipe bends were fabricated by the E. F. Keating Pipe Bending Co., Inc., New York.

Form Exhibitors Group

Manufacturers who exhibit in power shows have effected permanent organization of the Exhibitors Committee of Industrial and Power Shows Inc., for the purpose of collecting data on power shows for use of the exhibitors. The committee will classify the shows, indicate the benefits to be derived from them and permit the intelligent selection of shows in which manufacturers wish to exhibit.





CHASSIS and condenser housing in this modern radio set are made of steel. At the right: Stamping out silicon steel for power transformer core laminations. Photos, courtesy Majestic Radio

Large Uses of Steel in Small Ways

182nd Article ◆ ◆ Radio Sets

ACCORDING to the department of commerce, considerably more steel is used annually in the manufacture of radio sets in the United States than all other nonferrous materials combined. A survey by the electrical equipment division reveals 110,000 tons of steel is consumed; copper, 12,000 tons; copper alloys, 4000; aluminum, 4000; tin, 1800; nickel and alloys, 1500; zinc 1200 tons. Some of the other materials used are paper, 4365 tons; synthetic resin products 2600 tons; glass 3000 tons; cloth insulation 1000 tons, and miscellaneous, 13,000 tons. The total of 158,965 net tons thus enumerated is on the basis of an annual production of 3,900,000 radio sets, including tubes.

Some questions have been raised concerning the probability of the radio industry consuming 110,000 tons of steel in the production of 3,900,000 sets, which figures to 56.4 pounds to a set. The division, however, assures STEEL that the figures are correct, as shown by the detailed reports from manufacturers. Not all of the steel goes into the sets as there is some scrap loss, and, besides this, steel now is being used for parts which formerly were made of nonferrous metals.

According to the survey, 76,000 tons of steel sheets, strips, bars, etc., are used in the manufacture of 3,900,000 sets, and 32,350 tons in the speakers. Steel screws, nuts, washers, etc., in the sets amount to 1150 tons, and in the speakers 500 tons.

"We are utilizing steel for every item possible," one of the largest manufacturers tells STEEL. "We are using it because of its low cost. Brass, copper, and insulation material form a small part of the total receiver.

"More specifically the items made of steel are the framework of the receiver, amplifier and loudspeaker; the magnetic circuit of the loudspeaker; the laminations of the audio and power transformers; the enclosing cans, or shields for the transformers and the tubes; the control mechanism; the tuning condenser, and countless small parts.

"You probably will be particularly interested in the use of steel for the plates of the variable tuning condenser. Until this year these plates were always made of brass or aluminum but methods have been found for the use of steel even in the high frequency field."

Other manufacturers show a similar trend toward the use of steel, for light weight and strength, as well as low cost. The speakers in their sets are being made entirely of steel, with the exception of the paper cone, copper in the coil and two small phosphor bronze springs.

When radio was in its experimental stage and up to three years ago manufacturers tried to keep steel and iron away from their sets as far as possible. Precautions were taken to exclude steel screws in the assembly of sets, because of the prevailing opinion that ferrous metals affected sensitivity and tuning qualities. While steel now is used mainly for the boxes enclosing the table type receivers it is not used for the cabinet models. Manufacturers say wood is preferable for the cabinets because of its acoustic qualities. Perhaps a method will be found for using steel to a large extent in the cabinets, without sacrificing, but actually improving the tone quality.

Completes New Continuous Sheet Mill in South

Improvements started last year at the Alabama City works of the Gulf States Steel Co., Birmingham, Ala., now are completed. The new 40-inch blooming mill, equal in strength to a 44-inch unit, is driven by a 7000-horsepower motor with capacity for overloads up to 19,000 horsepower. Three 75-ton open hearths were enlarged to 90 tons capacity thus increasing the company's ingot capacity from 280,000 to 325,000 tons annually. Eight soaking pits equipped with Isley control and having capacity for eighty 18 x 20-inch ingots, also were completed.

The new 32-inch universal plate mill, which has an initial capacity of 20,000 tons a month, is the first plate mill to be operated by an automatic screwdown and the first 3-high plate mill to be driven by a direct-connected blooming mill type direct-current motor. The new continuous sheet mill includes three 2-high and three 3-high stands and one 3-high jobbing mill. The unit has initial capacity of 9000 tons monthly and is served by roller and patent levelers, corrugating machines, shears, and a pickling and galvanizing department. The product of the mill includes black, blue annealed, galvanized and full-finished sheets.

Installs Coating Plants

A complete new unit for copper and zinc surfacing strip steel was installed recently by the Pittsburgh Cold Rolled Strip Steel Co., Verona, Pa. Recent additions at the Lebanon, Pa., division of the Wrought Iron Co. of America included a complete galvanizing plant.

New Process Reduces Time Required For Pipe Welding

A new method of oxyacetylene welding, known as the Lindeweld process, which is said to reduce the time required in the welding of pipe for oil and gas transmission has been introduced by the Linde Air Products Co., New York. This process, which is the result of years of laboratory research and field testing, depends essentially upon a new method of blowpipe manipulation and upon the use of a new welding rod introduced for that purpose. Although the process is used at present chiefly for the welding of pipe, 300 miles of high-pressure pipe having been completed recently, future developments are expected to lead to its application in other industrial welding operations.

The Linde company states that this new method of welding has resulted in savings of from 30 to 60 per cent of the time required to make a weld by the methods previously employed and that oxygen and acetylene consumption also have been reduced. Tests of the tensile strength and ductility of the welds have shown that welds made by the new process compare well with previous results. Experienced welders find no difficulty in adapting themselves to the new method while it is more quickly learned by student welders than the former welding method.

Tank Design Competition Draws 691 Entries

Entries in the competition for the most aesthetic design of an elevated steel tank, sponsored by the Chicago Bridge & Iron Works, Chicago, which closed Dec. 1, have indicated unusual interest in the project by the registration of 691 architects, engineers and draftsmen as contestants. Residents of 16 countries will compete, Germany ranking next to the United States in number of entries with 40. Announcement of the award of eight prizes totaling $4000 will be made soon after the close of the contest. Designs must be submitted by March 1.

To Discuss Many Phases of Ceramics Industry

Practically every phase of the ceramic and associated industries is to be discussed during the meeting of the American Ceramic society, to be held at Public Auditorium, Cleveland, Feb. 22-28. In addition to the meetings of the Ceramic society, five other organizations will hold meetings in Cleveland during the week. These organizations are: Chicago World's Fair Ceramic association; American Refractories institute; National Brick Manufacturers association; Grinding Wheel Manufacturers association; and Feldspar Grinders institute. All meetings and the exposition will be held in the Cleveland auditorium.

Included in the extensive program of the society are a number of papers of interest to users and manufacturers of refractories Prominent among these are "Chromium Plating in the Ceramic Industry," by H. C. Wolfe, U. S. Chromium Corp., Pittsburgh; "Absorption and Emission of Heat by Open-Hearth Checker Brick," by Gilbert Soler and R. M. King, ceramics department, Ohio State university, Columbus, O.; "Welded Zigzag Windings and Refractories Shapes for High-Temperature Furnaces," by Louis Navias, General Electric Co., Schenectady, N. Y.; and "Progress Report on Abrasion Test for Refractories at High Temperatures," by J. B. Shaw and B. J. Bair, ceramics department, Pennsylvania State College, State College, Pa.

Papers presented in meetings of the enamel division of the society will include "An Investigation of the Effect of Smelter Atmospheres on Dry-Process Cast-Iron Enamels," by A. I. Andrews and H. W. Alexander, ceramics department, University of Illinois, Urbana, Ill.; and "A Systematic Study of Sheet-Iron Cover Enamels and the Development of a Process for Improving the Acid Resistance," by A. I. Andrews and D. G. Bennett, ceramics department, University of Illinois, Urbana, Ill.

The bureau of mines, Washington, has published information circular No. 6386 listing and describing the domestic and foreign deposits of titanium-bearing ores. Each state in the United States and each country is listed separately.

24-Ton Boiler Plate Is Rolled on World's Largest Mill

WHAT is regarded as the world's largest and heaviest steel plate was rolled by the Lukens Steel Co., Coatesville, Pa., on its 206-inch four-high reversing-type plate mill on Dec. 26. The mill is the largest plate rolling mill in the world. The plate, shown in the accompanying illustration, was reduced from a carbon steel ingot weighing approximately 92,130 pounds, produced in the company's own open hearth. Sheared dimensions of the plate are 195 inches in width, 360¾ inches in length and 2⅜ inches in thickness. Finished weight is approximately 48,200 pounds.

The plate was rolled for the D. Connelly Boiler Co., Cleveland, and will be used in fabricating for the Humble Oil & Refining Co., Baytown, Tex., a cross-drum, sectional-header boiler of 2000-horsepower and 650 pounds working pressure. Another plate of the same size and for the same purpose will be rolled shortly. The two boilers, each of which must deliver 350,000 pounds of steam per hour, an equivalent of 10,000 boiler horsepower, will be of riveted construction with all rivets machine ground to exact diameter. Each unit will be equipped with a superheater, water wall and economizer and will be oil fired.

Rolling mill operations were in charge of R. W. Simpson, superintendent of mills, supervised by J. H. McElhinney, general superintendent, and W. H. Warren, vice president and general manager, Lukens Steel Co.

Welded structural steel instead of castings is used for the base of this shovel by the Steel corporation's mining subsidiary, the first with this type of construction in the Lake Superior district

Iron Mine Operators Prepare for More Active Season

BY A. J. HAIN
Associate Editor, STEEL

LAKE SUPERIOR iron ore operators begin the new year with nearly normal winter forces employed, though not full time. A special effort is being made by the mining companies to provide some work for as many as possible, and a great majority of the 17,000 employes in various departments of the industry are being carried on payrolls. In addition to the regular winter mining operations, considerable repair and construction work is being done and improvements are being made at this time with the particular purpose to provide employment. The large steel companies have given instructions to find some work for the men.

When winter comes in the mining towns if the men are unable to find work at their regular occupation, they are provided with work, such as shoveling snow and cleaning up the streets, at the town's expense. As the mine owners and operators pay by far the largest share of the taxes they pay indirectly the wages of the miners so engaged. Town authorities some times are lax in their methods, and rather than pay for something not done, poorly done, or not essential the employers prefer to keep them busy first hand. The mining companies are the largest business interests and pay the heaviest taxes.

The need for considerable repair, improvement and extension work also is being felt, and several of the most important companies say they have as many workers engaged full time this winter as a year ago. Demand for iron ore was beginning to fall off as 1930 entered and operations were on a reduced scale through the greater part of the year. With iron ore shipments for the year down to 47,000,000 tons, a reduction of 28 per cent from 1929, and the smallest since 1924, operators are preparing for a larger output this year.

Nineteen-thirty was not as productive of as many changes in control of mines as 1929 when many mergers in the iron and steel industry were reflected in the Lake Superior district. The sale of the Corrigan, McKinney Steel Co. to Cleveland-Cliffs Iron Co. gave to Cleveland-Cliffs control of 11 mines in Michigan and four in Minnesota. Eight of the mines are on the Menominee range, three on the Gogebic, and four on the Mesabi. The four Mesabi mines are listed by the state as containing reserves estimated at 11,100,000 tons, while reserves in the Michigan properties are not disclosed. The mines are capable of producing more than the Corrigan, McKinney requirements of 1,250,000 to 1,500,000 tons a year.

Cleveland-Cliffs also extended its control over Lake Superior iron ore mines by an affiliation with Oglebay, Norton & Co., the largest merchant iron ore producer heretofore unassociated with iron and steel companies. Only three or four small all-merchant ore shippers now remain in the field. The number of these "independents" has been steadily decreasing over the past 12 years, and it is likely the properties now owned or controlled by them eventually will be absorbed by steelworks interests. Some of the Oglebay, Norton mines are among the best in the Lake Superior district, both from the standpoint of reserves and equipment. The firm, strictly an operating concern, has a contract with the Russian government to develop Russian iron ore mines, and recently a group of soviet mining engineers visited the Montreal and other "model" mines in the Lake Superior district.

Subsequent developments have shown that Oglebay, Norton will continue as a separate operating company, not being absorbed by Cleveland-Cliffs which bought heavily in some of the mines. The Oglebay, Norton vessel subsidiary, Columbia Steamship Co., also is operating as a separate entity. The company shipped 1,829,886 tons of ore in 1930 and 2,800,000 tons in 1929.

Eaton Influence Extended

Acquisition of the Youngstown Sheet & Tube Co. by Bethlehem Steel Corp. would have given Bethlehem large additional reserves in the Lake Superior district, but this merger has been enjoined. Cyrus S. Eaton and associates who opposed the merger own half of the Cliffs Corp., which in turn controls the Cleveland-Cliffs Co. Mr. Eaton, therefore, extended his influence over Lake Superior mines, though the Republic Steel Corp., which he and his associates control has not figured

«All in a Lifetime»

FORTY years ago—Nov. 16, 1890, to be exact—the first commercial deposit of iron ore was discovered on the Mesabi range by Capt. J. A. Nichols, employed by the Merritt brothers. The event was to have been celebrated at Mountain Iron, Minn., where the ore was discovered, but more time was required by the town's people to put on an impressive historical pageant. It will be held next June. Ore was not shipped from the Mesabi until two years after its discovery, all that time being required in sinking a shaft and other "development" work. In two score years the Mesabi has produced 858,717,727 tons of ore, approximately equivalent to a half billion tons of iron. Pioneers labored under untold hardships in a wilderness; many fortunes have been made and lost, and the range finally has been brought to the peak of its development—all in a lifetime.

to any important extent in recent mine regrouping.

The M. A. Hanna Co., associated with the National Steel Corp., again took the opportunity to acquire additional ore property. It was one of the most aggressive interests in this respect in 1929 and in 1930 it leased from the Great Northern Iron Ore Properties 200 acres near Keewatin, Minn.; also the Draper and Draper Annex properties, embracing 200 acres near Nashwauk, and 80 acres adjoining the Canisteo mine, all undeveloped. It is planning to develop the 200 acres near Keewatin and mine the ore by shaft. The Hanna company also acquired property adjacent to the old Mississippi open pit, Mesabi range, and is sinking a four-compartment shaft on this tract.

The Oliver Iron Mining Co., subsidiary of the United States Steel Corp., purchased the Holmes mine, in Ishpeming, Mich., from the Cleveland-Cliffs company. Most of the ore has been taken out of the Holmes mine. The Oliver company owns the adjacent Section 16 mine, and a drift will be driven between the two properties. The Section 16 shaft will be closed and the ore removed through the Holmes shaft.

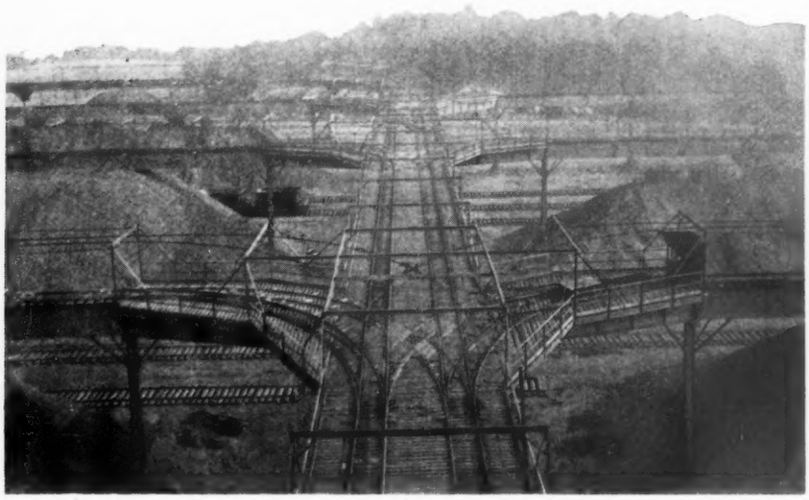
Lease Is Exchanged

The Oliver company purchased the fee of the Neely iron ore property on the Menominee range, and also acquired the lease which was held by the Cleveland-Cliffs company. The Oliver company owns adjacent property, and as Cleveland-Cliffs has sufficient of the particular grade of ore found on the property it agreed to the surrender of the lease to the owners who sold to the Oliver company.

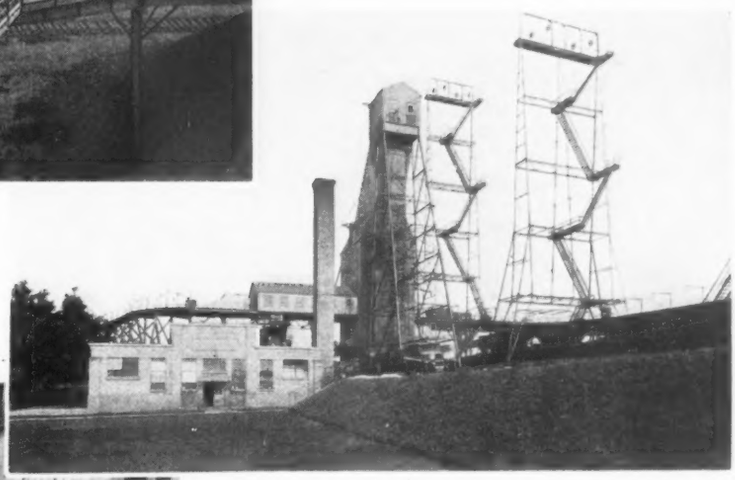
An interesting sidelight on this transaction is that the Ford Motor Co., which a few years ago acquired two mines in Michigan, once had an option on the Neely property and spent considerable time and money checking up drill records but allowed the option to lapse. The Ford company, however, owns adjacent land from which it may some day extract ore.

On the same range, the Menominee, the Ford company in 1930 purchased the Walpole property, comprising about 300 acres, and containing considerable ore near the surface available for open pit mining. A mine called the Walpole was opened in 1895 by the Walpole Iron Co., and leased to the Pewabic Mining Co., which surrendered the lease in 1919 when its own mine, the Pewabic, was exhausted.

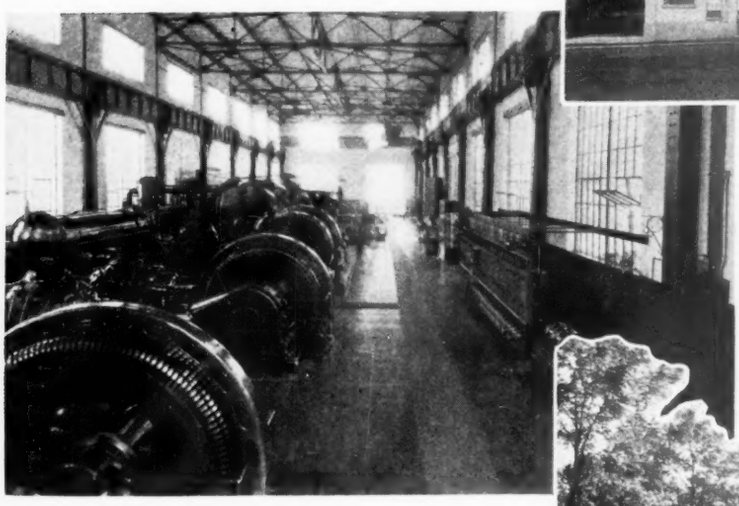
Drilling on all the ranges was more intensive during the past year; practically all of the companies had



MODERN stockpiling facilities at Montreal mine, Gogebic range. Three hundred thousand tons of ore can be stocked under and alongside these trestles

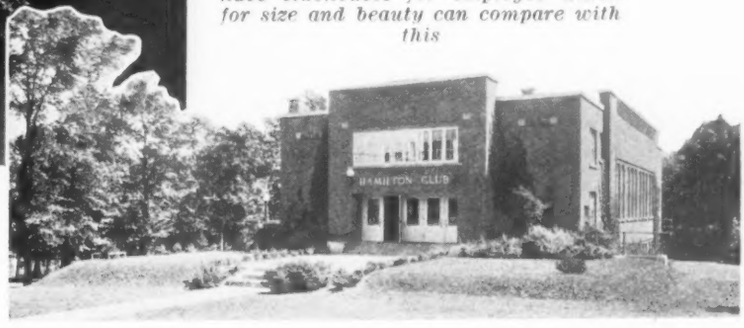


NO. 5 shaft at Montreal mine. It is electrically equipped to hoist ore from a depth of 4500 feet



ENGINE house at No. 5 shaft is equipped with three 2240 cubic feet compressors, a 600-horsepower double drum cage hoist, and a 2300-horsepower double drum skip hoist

HAMILTON clubhouse for employes of Montreal mine. Several of the leading mining companies have clubhouses for employes which for size and beauty can compare with this



A good mine converted into a lake. Floods some times interrupt operations at the open pits in Minnesota. The water generally has to be pumped out

equipment in the field, and some of them were acquiring options in every conceivable corner. Drilling appeared to be concentrated in the Menominee range, though among mine operators it is understood nothing of importance was disclosed except by the Jones & Laughlin Steel Corp. This company is reported to have had some success near Crystal Falls.

Pickands, Mather & Co., are drilling through the ice of Rabbit lake, Cuyuna range, this winter to locate an ore deposit. Many acres were acquired on this range by various explorers. Clement K. Quinn & Co. have drills at work on the east end of the Shada mine, near Nashwauk, Minn., Mesabi range. The Polaris Iron Co. put a drill down 1834 feet on the Vermillion range, where the mines are deep, but discontinued the operation when difficulties arose over acquiring leases. Bethlehem Steel Corp., was busy for a time in the Michipicoten district, Ontario province, but suspended until tests could be made on the ore that was revealed. The ore contains a high percentage of arsenic.

Starts 6-Compartment Shaft

Conspicuous among important mine developments is the sinking of a 6-compartment all-steel shaft at the Newport mine, Gogebic range, operated for Youngstown Sheet & Tube Co. by Pickands, Mather & Co. The Newport is one of the largest underground mines in the Lake Superior district. Two to three years will be required to build the shaft, steel headframe, fireproof surface buildings, and the cost is estimated at $1,000,000. The shaft will penetrate considerable granite and the first opening will be down 2579 feet. Hoisting capacity will be sufficient to handle two double-deck cages from a depth of 4500 feet.

Pickands, Mather also plan to deepen the Curry shaft at their Penn mine in Michigan 450 feet to a depth of 2300 feet. The Oliver company is deepening the shaft at its Leonidas mines, Mesabi range. Inland Steel Co. has put down a concrete shaft to a ledge 105 feet at the new Greenwood mine, Marquette range, and will continue sinking the shaft through quartzite to a depth of 1150 feet, from which a drift will be driven to the ore body. Jones & Laughlin Steel Corp. has nearly completed a shaft at the South Agnew mine, Mesabi range, and is erecting surface buildings.

Abandon Two Shafts

Oglebay, Norton & Co. have abandoned two of their three shafts at the Montreal mine for ore hoisting purposes and hoisted the mine's entire production of nearly 1,000,000 tons in 1930 through one shaft. This shaft is vertical and down 3036 feet. It is equipped electrically to hoist ore from a depth of 4500 feet.

Four new mines were opened in 1930; the Malta, near Gilbert, Minn., by the Bowe-Burke Mining Co.; Drew, near Buhl, Minn., by the Dohon Mining Co., and the Wheeling mine, Virginia, Minn., by the Wheeling Steel Corp. All of these mines are on the Mesabi range. A washing plant is part of the equipment at the Drew. The fourth new mine is the Alstead, Cuyuna range, operated by the Maganiferous Iron Co.

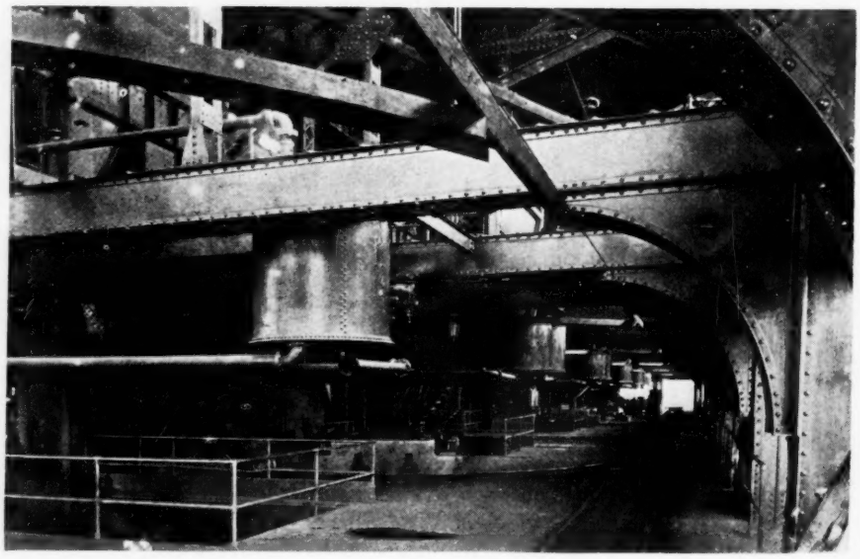
The Holman-Cliffs mine, a large open pit on the Mesabi range recently enlarged and developed by the Cleveland-Cliffs company also got into production in 1930. This company is bringing near the production stage the Canisteo, after pumping about 2,500,000,000 gallons of water out of the pit. These two mines and the Hill - Trumbull, operated by Cleveland-Cliffs, have plants for washing the ore and the company will soon have capacity for shipping 2,000,000 tons of washed ore annually.

Oglebay, Norton stripped 500,000 cubic yards from the new Greenway mine, Mesabi range, and is preparing for shipments. Part of the ore will be washed.

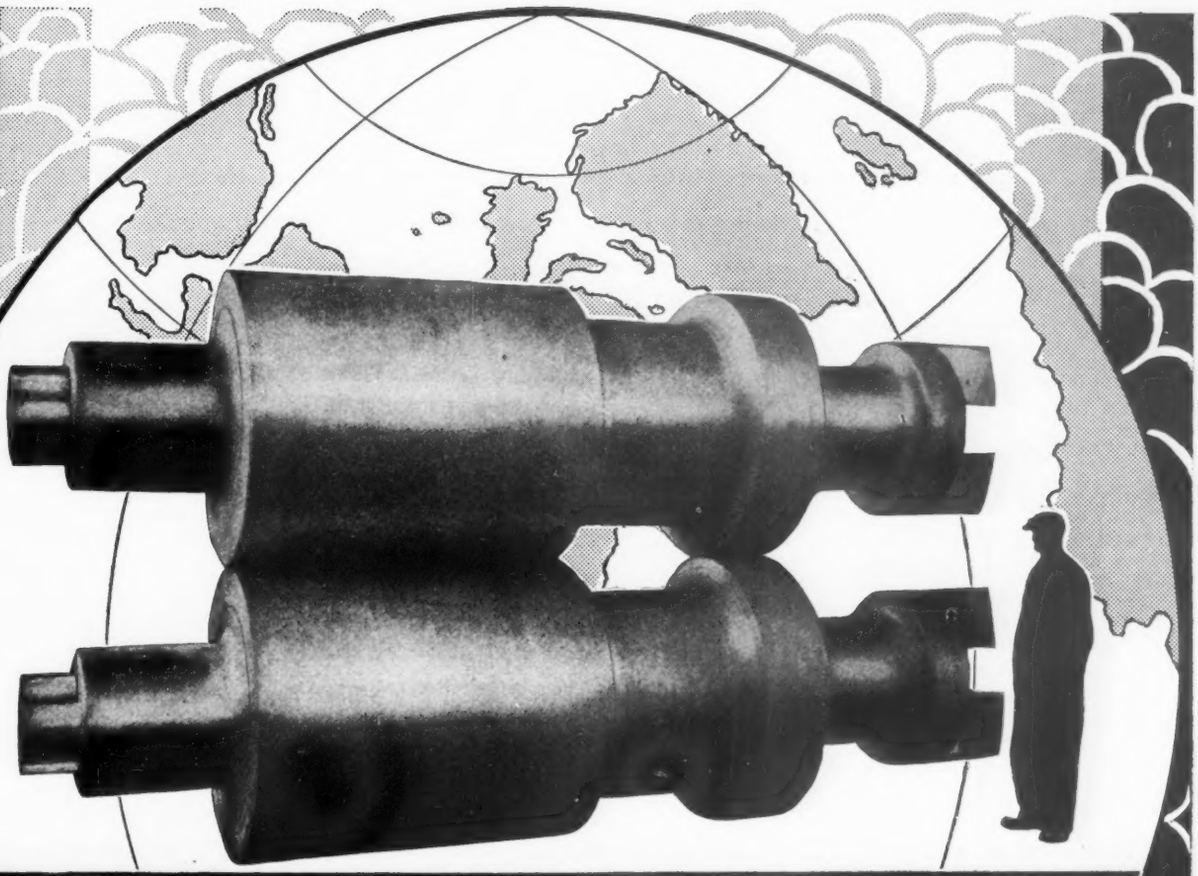
The Wisconsin Steel Co. has resumed production at its Bruce, Sargent and Agnew mines, Mesabi range, after a shutdown since Sept. 6. The Bruce, as reported in the Jan. 1 issue of STEEL, page 293, now has in operation a plant for sintering iron ore mined by the underground method.

Many employes are finding work in stripping operations which are being performed by the majority of the large companies this winter. The Duluth, South Shore & Atlantic railroad is preparing to build a $1,000,000 steel and concrete ore dock at Marquette, Mich.

State highway department, New Jersey, has bought 2000 cast iron posts and 1100 caps, placing the business with Duncan Mackenzie Sons Co. Inc., Fieldsboro, N. J.



More than 60 plants have been constructed in the Lake Superior district for washing, screening, crushing or sintering iron ore. This is an interior view of a washing plant at Coleraine, Minn., Mesabi range



THE LARGEST BLOOMING MILL ROLLS IN THE WORLD MADE BY MESTA

57″ Diameter, 120″ Body Length,
18′-3½″ Total Length,
Weight in Rough 105,000 lbs. each.

MESTA MACHINE COMPANY
Pittsburgh, Penna.

Mesta

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

USES:

Stainless Steels and Irons

Structure and metallographic character of corrosion-resistant iron alloys which depend upon high chromium content for valuable properties, presented in Heat Treating and Forging, November 1930, *p.* 1419, 8 *pp.*, 17 *illusts.*

Chromium possesses an almost unique property of protecting itself against atmospheric corrosion in spite of a great tendency to combine with oxygen. It is believed that a fresh surface of chromium metal becomes oxidized almost instantly, but that this invisible film of oxygen or oxide is itself of such a nature as to be continuous, impervious, and extremely stable. The corrosive action, which starts with great avidity, is stopped the moment it begins. This property of chromium probably is possessed to some extent by aluminum and silicon; it may even be a vastly more intense manifestation of the temporary passivity acquired by iron and nickel in the presence of strong oxidizing agents such as nitric acid.

In any event, this remarkable property of chromium is conferred also upon its solid solutions in iron when a fair amount, roughly 12 per cent, is present.

—STEEL 1-8-31

PRODUCTION:

Iron Ore Concentration

Test results on the concentration of tailings from washing plants of the Mesabi range, by F. D. DeVaney and W. H. Coghill, in bureau of mines research investigation 3052, *November* 1930, 23 *pp.*

Current tailings from Western Mesabi washing plants contain about 20 per cent iron, but through natural concentration by wind and water the bulk of the tailings in the sludge ponds now contain from 45 to 50 per cent iron. Roasting the sludge pond tailings, followed by magnetic concentration, yields high-grade concentrates containing about 64 per cent iron, 0.042 per cent phosphorus, and 8 per cent silica, with a recovery of iron of 97 per cent. The tenor of the nonmagnetic tailings is about 5 per cent. Provided the feed first is classified, tabling also is effective. Concentrates were made with a tenor of 61 per cent iron, 0.0343 per cent phosphorus, and 8.85 per cent silica, and contained 82 per cent of the total iron. Whereas the nonmetallic tailings had only 5 per cent iron, the gravity tailings were about 30 per cent iron.

—STEEL 1-8-31

Wire Guides

The use of tungsten carbide as guides in the production of springs and coiled wire products, described in Carboloy, December 1930, *p.* 21, 1 *page.*

While the greatest emphasis has been laid on cemented tungsten carbide as a cutting medium, its abrasion resistant qualities have made it equally valuable on other applications that do not call for a cutting edge. Since the early part of 1930, wire guides of this material have been used in one plant in the manufacture of all types of springs and coiled wire products, chief among which are the various types and sizes of springs that are used in the automotive field. The value of the material is found in the fact that because of the longer life of the wire guide, fewer set-ups on the machine are needed, effecting a decided saving. Also, longer runs with greater accuracy in the finished part may be obtained.

—STEEL 1-8-31

FABRICATION:

Welding Steel Structures

Present status and recent advances made in American methods, described by Frank P. McKibben, in Journal of the American Welding society, November 1930, *p.* 7, 12 *pp.*, 2 *tables*, 8 *illusts.*

In a short period of time, welding as applied to fabrication of new steel buildings and to strengthening existing bridges has advanced from the experimental to the practical stage. Some of the largest railroad systems have applied welding very successfully to strengthening steel girders or truss members in bridges which support tracks as well as in structures carrying highways overhead. The article presents brief descriptions of important buildings now being wholly or partially welded, a description of machine welding, the economies afforded, battledeck floors, welding and the building codes, procedure control and qualification of welders, strengthening steel structures by welding, the design of welded joints, and nondestructive methods of testing the quality of the welds.

—STEEL 1-8-31

World's Fair Buildings

Design of the Travel and Transport building for the Chicago World's fair offers some unusual features, described by Clarence W. Farrier and Bert M. Thorud in Journal of the Western Society of Engineers, October 1930, *p.* 384, 11 *pp.*, 3 *illusts.*

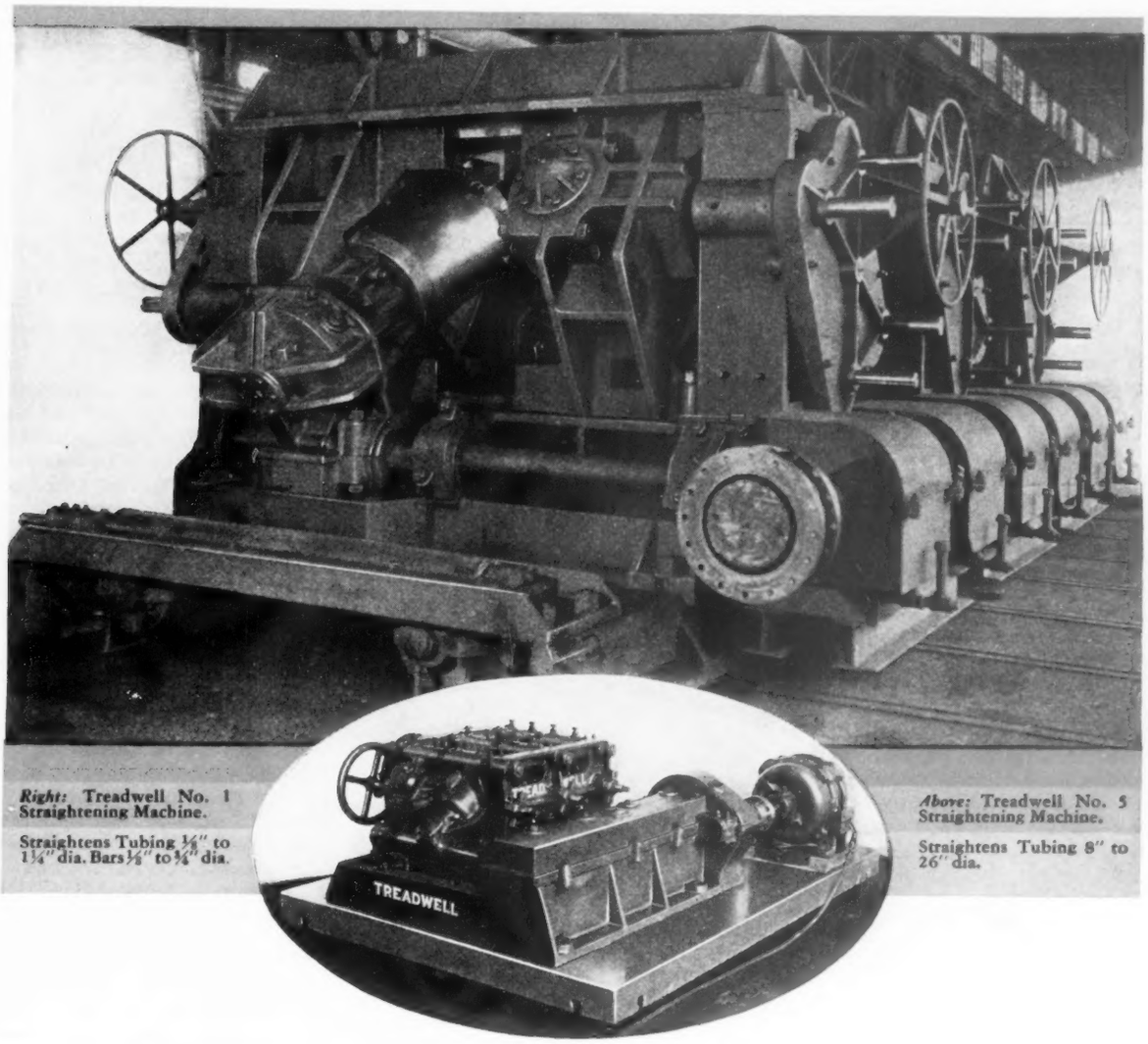
Unrestricted by the limitations of any building code, the engineers for this new type of construction, evolved for the coming World's fair, have been able to work out a design entirely new. The building including a large dome will be erected for a cost of about 7¼ cents per cubic foot. A suspended type of construction using steel in tension is the principal element of this design. Extensive provisions are made for wind and snow loads and at every point where undue stress might cause a minor failure or disruption of the appearance of the sides or dome, adequate expansion joints are provided. These joints, however, are so arranged that they will offset only the expected stress. Any extreme stresses will expand the structure to a point where bolts stop the movement and transport further stress to the rest of the building. The cables supporting the columns and the dome are to be watched carefully for some time to insure that each one takes its intended load. The whole structure will be unusually flexible. In the design, no attempt was made to build something that would last indefinitely as the requirements only necessitated a structure that would stand safely for five or six years.

—STEEL 1-8-31

TREADWELL

(*Abramsen Design*)

STRAIGHTENING MACHINES



Right: Treadwell No. 1 Straightening Machine.

Straightens Tubing ⅛" to 1¼" dia. Bars ⅛" to ¾" dia.

Above: Treadwell No. 5 Straightening Machine.

Straightens Tubing 8" to 26" dia.

TREADWELL (*Abramsen Design*) Straightening Machines—incorporating several exclusive features of design—are made in sizes to straighten tubing from ⅛" dia. to 26" dia., and bars from ⅛" dia. to 10" dia.—minimum and maximum delivery speeds to suit the individual requirement of the mill. Before you decide on your next straightening equipment, be sure to have the smallest model Treadwell Straightener brought to your plant for inspection and a working demonstration. This will be gladly arranged at your convenience.

BETTER GRADE MACHINERY

Treadwell Engineering Company

Easton, Pa.

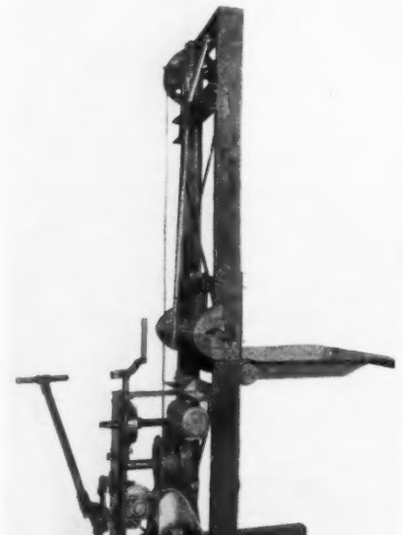
Rolling Mills—Threading & Cutting-Off Machinery
Special Machinery—Iron & Steel Castings

Machine Tools and Plant Equipment

«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

Stacker Conserves Space and Reduces Handling

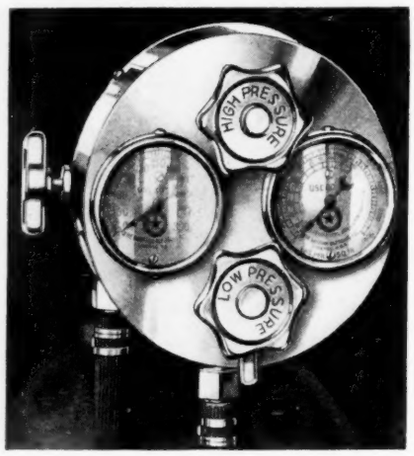
Lewis-Shepard Co., Watertown station, Boston, has added to its line of lifting equipment a combination gas-engine driven and handpower stacker. This machine, shown in the accompanying illustration, is operated by a compact 2½ to 3 horsepower air cooled engine and will lift a 1000-pound load at the rate of 40 feet per minute. Lowering the load is taken care of by means of a decelerator control which prevents undue speed. The stacker is of value in providing suitable means of tiering and storing material so that floor space is saved and handling eliminated.



Units weighing up to 1000 pounds are tiered by this machine

Duplex Regulator Provides Constant Gas Pressure

Bastian-Blessing Co., Chicago, has developed a duplex, two-stage regulator, shown in the accompanying illustration, which delivers unvarying pressure to the welding or cutting torch. To overcome the difficulty of keeping the flame control constant, a special regulator for the first stage was designed and constructed to perform in balance with a precision regulator at the second stage. Both stages are thus governed by regulators having large size diaphragms, functioning at any desired pressure. The result of proper proportioning and balancing of the action of these two regulators is the maintenance of a constant neutral flame, regardless of fluctuations in tank pressure.



Regulator insures uniform flame regardless of tank pressure

The regulator is designed so that it not only can be used for welding and cutting but both operations can be performed simultaneously. A separate high pressure outlet with a needle valve is provided on the first-stage line. When the operator does not need his cutting torch, he simply closes this valve. An automatic safety outlet releases any abnormal or excess pressure caused by accident to any part of the equipment, thus eliminating danger caused by flying glass from regulator dials. The design also includes nonigniting seat and nozzle construction.

The regulator is so compact that it extends only slightly beyond the width of the tank and there is little chance that it might be knocked off by passing equipment. A new alloy has been adopted which weighs only one third as much as brass and has a tensile strength of 55,000 to 65,000 pounds per square inch, and forged parts are used throughout. The regulators are designed in models for use with oxygen, acetylene and hydrogen tanks.

Chisel delivers 6000 blows per minute in this air-driven chipper

New Air Chipper Provides Freedom of Action

Madison-Kipp Corp., Madison, Wis., has announced an air-driven chipper which operates at pressures of 60 to 100 pounds. The chipper, shown in the accompanying illustration, delivers over 6000 blows per minute to the chisel through a turbine-valve hammer mechanism. The intensity of the chisel strokes or blows is regulated by the pressure the operator exerts against the chisel and also by the position of the trigger valve. The chipper will operate in any position, giving the operator freedom of action for clearance and convenience.

Air under pressures of from 60 to 100 pounds, enters the mechanism through a hose connected to the handle, which is of the pistol-grip type. Control is by a trigger valve, which, when pressed, admits air to the rotary valve. The position of this rotary valve is always such that the air, under pressure, will first flow to one end or the other of the hammer cylinder. This drives the hammer forward or backward through half a cycle so as to uncover one of the exhaust ports. This port is connected to the air turbine. The exhaust air drives a turbine attached to the rotary valve, causing this valve to direct the air from one side of the hammer to the other so that the cycle is completed and thereafter automatically repeated as long as the air continues to flow.

Flanged Joint Provides Greater Flexibility

Merco Nordstrom Valve Co., 343 Sansome street, San Francisco, has developed a new type of flanged joint for use in connection with welded pipe lines where such a joint is

Joint simplifies application of fittings to welded pipe lines

required for the insertion of valves and fittings for the taking off of outlets. The joint, shown in the accompanying illustration, consists of a drop-forged steel flange, fitted to a drop-forged tapered nipple on which the flange may be rotated, permitting the alignment of bolts, etc. The tapered nipple is forged from a solid steel billet and the finished product provides at the base of the nipple where highest stress occurs, a thickness much greater than that of the pipe. The principal advantage of the joint is its flexibility.

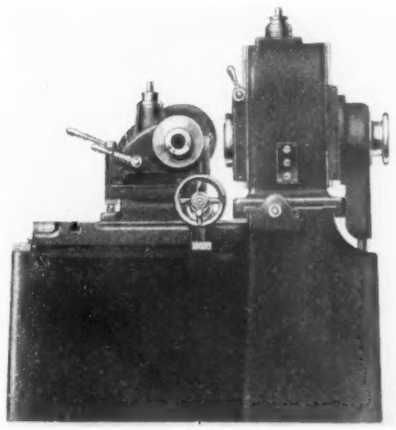
This swivel flange offers an additional advantage where service requires a special alloy such as the new chrome-nickel steels. For such service the tapered nipple only is forged from the alloy, while the flange is forged from ordinary steel, permitting a less costly joint. The tongue and groove type of construction also can be incorporated when desired. These flanges can be furnished with pipe nipples of various lengths welded on before leaving the factory. They are available in 1½ to 10-inch sizes.

Gear Testing Machine Has Wide Capabilities

Gleason Works, 1000 University avenue, Rochester, N. Y., has designed a new type of universal gear testing machine. This machine, a front elevation of which is shown in the accompanying illustration, will test straight and bevel gears with any shaft angle, also hypoids, helical gears, angular helical gears, and internal, herringbone and spur gears. Its maximum capacity is 13 inches outside diameter.

To give the accuracy and rigidity necessary to permit of satisfactory running tests of gears under load, the machine is of heavy construction. The frame is a one-piece casting, heavily ribbed in the direction of stresses. The pinion head, which carries the driving spindle, is adjustable vertically on its column so that the necessary offset of the pinion from the center of its mating gear can be obtained. This adjustment is made by means of a lead screw carrying a dial graduated to 0.001-inch. The column also has a horizontal adjustment on the frame, which is used when testing angular gears with long cone distance.

The gear-carrying head is mounted on a slide which provides horizontal adjustment to take care of the mounting distance of the gear.



Testing of various kinds of gears is purpose of this machine

It also swivels on a base, permitting angular settings from 0 to 180 degrees. In addition, there is a horizontal adjustment on the frame to take care of changes in mounting distances of pinions. The angular adjustment can be made to an accuracy of 20 seconds, and the lead screws have dials graduated to 0.001-inch.

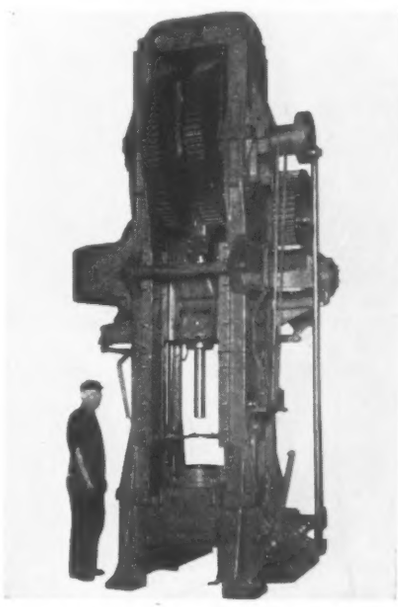
The spindles are mounted on precision matched ball bearings which are preloaded, and the taper holes are ground with the spindles in place on their bearings. Drive is by a 3-horsepower motor with three speeds and reverse control. Two sizes of pulleys give spindle speeds of 400, 500, 600, 750, 800, 1000, 1200 and 1500 revolutions per minute. Standard equipment includes overarm support for drive head, as well as all necessary gages and tools. Arbors are not furnished as standard equipment but it is advisable to order them at the time the machine is purchased.

High Speed at Long Stroke Attained in New Press

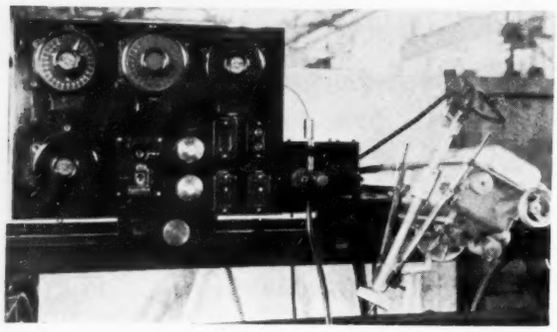
E. W. Bliss Co., Fifty-third street and Second avenue, Brooklyn, N. Y., recently put on the market a new design of redrawing press for operating on long shells of brass, copper or aluminum. One of these presses, which has a 36-inch stroke, is shown in the accompanying illustration. It has been demonstrated that the soft metals for which this machine was designed can be drawn successfully at the speed of 170 feet per minute attained by this press at 18 strokes per minute. This is said to be 5 to 10 times as fast as the ordinary rack and pinion press.

Instead of the conventional type of crank, which in long throws has an excessive twisting moment, this new press makes use of two large steel gears connected by a 7-inch diameter crank pin and force fitted to journals which rotate in long bronze bearings in the side frames. These gears thereby correspond to the cheeks of the ordinary crank, with the important difference that the pinions deliver power directly to the cheeks instead of indirectly through the shaft and thence to the crank. The maker claims that this design allows the machine to be about one-half as heavy as one of conventional design, at the same time enabling it to operate twice as rapidly.

The machine has a built-up type of frame with shrunk-in tie rods. It is double geared, the pinions being



New idea in press design gives speed on long strokes



Atomic hydrogen welding can be carried on automatically on all kinds of longitudinal seams by means of this outfit

of the solid one piece type, with the train set out of step by one-half a tooth pitch to insure smoothness. A full automatic friction clutch with both foot treadle and hand lever control is used and by it the slide can be stopped or started at any point of the stroke. Drive shaft and clutch are mounted on tapered roller bearings, and force feed lubrication is provided. The weight of the press shown in the illustration is approximately 41,000 pounds. It is driven by a 40-horsepower motor.

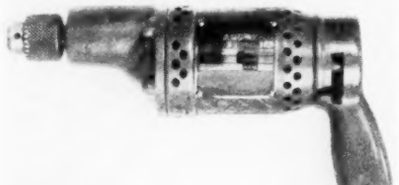
Automatic Welder Utilizes Atomic Hydrogen

General Electric Co., Schenectady, N. Y., is announcing a new automatic welder for atomic hydrogen welding. This equipment, shown in the accompanying illustration, is the first application of automatic equipment to this process, previous atomic hydrogen welders being for hand welding only. The new welder is designed for longitudinal seam welding of all kinds. It consists of a clamping mechanism for holding the work, an automatic travel carriage, a welding head and the usual control devices and other accessories. The clamping mechanism and travel carriage are of standard types, while the welding head, control, etc., are of special design to suit the use of atomic hydrogen welding. In addition there is an auxiliary feeding device for feeding filler rod into the arc, as the tungsten electrodes used to form the arc are consumed slowly and do not contribute metal to the weld.

In operation, the work is clamped in place in the usual manner, the travel carriage is set at one end of the seam and the "start" push button is depressed. The remainder of the operation is automatic. With the pressing of the "start" button the line contactor closes, applying power to the equipment and simultaneously opening a valve supplying hydrogen to the arc. The striking of the arc, movement of the travel carriage and length of the arc are all controlled automatically.

Midget Tools Are Designed for Rapid Drilling

Independent Pneumatic Tool Co., 600 West Jackson boulevard, Chicago, announces six new high-frequency tools of the midget type. The tools, one of which is shown in the accompanying illustration, are made in two styles, one with bonnet switch, the other with grip switch. The bonnet-type fits in the palm of the hand and is unusually light. These electric tool drills are designed for fast, accurate drilling and are suited for automobile body trim work, and in connection with metal furniture, steel shelving, radio and electric appliance manufacture.



Compactness with high drilling speed characterize this tool

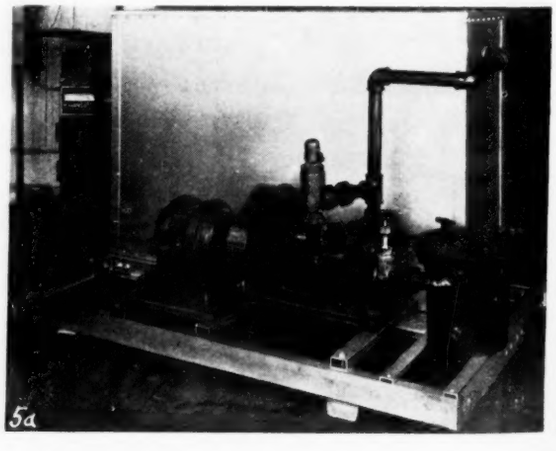
The bonnet-type drills are furnished in three speeds, 2300, 2790 and 3700 revolutions per minute. Drilling capacity is ¼-inch; weight, 3 pounds; and overall length, 9½ inches. The grip-switch style is similar in its specifications to the bonnet-type style with the exception of its weight which is 4 pounds 1 ounce.

Cleaner and Agitator Unit Aids in Finishing

Despatch Oven Co., 622 Ninth street, Minneapolis, has introduced a new type of conditioning equipment for automatically keeping all types of finishes clean, agitated, and heated. The equipment, which is shown attached to a small dip tank in the accompanying illustration, is a combination of strainer and agitator, forming a single compact unit. The finish is taken from the dip tank, or flow coating device, by a rotary pump which forces the finish through the strainer. After it is thoroughly strained, it is forced back into the tank. This cycle is continuous, and the equipment usually is arranged so that all of the finish in the tank is passed through the strainer once every 5 or 10 minutes.

In addition to removing foreign substances from the finish, the device also acts as an agitator. The constant circulation of the finish, due to the action of the pump, keeps the pigments uniformly distributed and eliminates a frequent cause of off-color or streaked finishes. An indicator is provided which warns the operator when cleaning of the strainer is necessary.

In addition to heating liquid finishes and to removing foreign substances from such material, this device acts as an effective agitator, thereby eliminating off-color and streaked work



Steel Needs Increase Moderately

Comeback After December Low Pronounced—Prices Firmer—Building and Rail Needs Dominant—December Pig Iron Output an 8-Year Low

DEMAND for finished steel has rebounded encouragingly in all districts, and while January activity will not measure up to a year ago the gain over December undoubtedly will be substantial. This improvement is well distributed, a moderate expansion of requirements appearing to have cut horizontally across all classes of steel consumers.

Whether this betterment exceeds the proportions of the usual first quarter pickup none will venture, but steelmaking operations are swift to respond to the seasonal influence. Steel is being made this week at 42-43 per cent of capacity, a rise of 6 points. Youngstown, where two blast furnaces will be lighted this week, is at 39 per cent, Chicago 40, eastern Pennsylvania 42, Buffalo 46, Pittsburgh 42, Birmingham 35 and Cleveland 50.

Building and the railroads, ranking first and second in point of steel consumption in 1930, continue their leadership. Chevrolet still leads in automotive releases, which as a whole await the verdict of the January shows. Ford has deferred resumption in most departments until Jan. 12, but has scheduled a daily rate twice that of December. Farm implement manufacturers proceed cautiously.

Rail orders formally entered include 50,750 tons for Louisville & Nashville, 13,250 tons for Central of New Jersey, 3000 tons for Lackawanna and 1600 tons for Duluth, Missabe & Northern. Southern Pacific is inquiring for 60,000 tons, with St. Paul expected in the market for 40,000 tons and Rock Island for 35,000 tons. Canadian National has bought 2700 cars and Canadian Pacific 1000.

Structural steel awards, topped by 6950 tons for the Ogden avenue bridge at Chicago, totaled 26,406 tons, exceeding the 24,458 tons of a year ago. Thirteen thousand tons of subway work may be let in New York this week. New inquiry, which is large, includes 5000 tons for a war memorial at San Francisco, 5300 tons for Boulder dam and 10,000 tons of miscellaneous work at Chicago. Boulder dam will require, all told, 10,400 tons of structurals in addition to 12,500 tons of bars, 10,000 tons of plates and 16,250 tons of pipe. Minnesota has bought 3000 tons of bars for roadwork; Louisiana and Tennessee each have 2000 tons pending.

Sheet and bar specifications are moderately better despite the lack of sizable automotive business. Railroad requirements, both for repairs and car construction, dominate plates. Jobber buying of wire promises well for January. Line pipe activity is slow, but utilities and municipalities have considerable cast pipe to place. Milwaukee has bought 6000 tons.

Melters of foundry iron having covered cautiously for the first quarter, little spot business is going, but reflecting improved steelworks operations demand for basic iron has improved, especially in eastern Pennsylvania where large sales have been made. Iron and steel scrap is sensitive to the general improvement, and the market is firmer. Moderate sales of heavy melting steel are reported in the East.

December production data make the January comeback appear the more favorable. Last month pig iron, on a daily basis, declined to 53,730 gross tons, 13.6 per cent below November and the lowest for any month since January, 1922. December output of 1,665,630 tons gives 1930 a total of 31,441,403 tons, compared with 42,270,183 tons in 1929 and the poorest year since 1924. On Dec. 31 only 96 of the country's 310 stacks were active, a net loss of 11 in December. Relating production to capacity, December was a 38 per cent month.

Steel prices are on firmer ground. Cold-finished bars are at a minimum of 2.10c. Concessions on sheets, strip and wire have virtually disappeared. On bars, plates and shapes 1.65c, Pittsburgh, or equivalent, is more generally quoted, although 1.60c still is available to some buyers. Most shipments are priced at 1.60c. With one exception, bids on New York Central plates for first quarter were 1.65c, Pittsburgh, or equivalent. However, until more sales are consummated, heavy steel warrants a range of 1.60c to 1.65c, and STEEL's market composite thus is unchanged this week at $31.66.

Composite Market Averages

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe.

This week (Jan. 7, 1931)	**$31.66**
Last week (Jan. 1, 1931)	**31.66**
One month ago (December, 1930)	**31.74**
Three months ago (October, 1930)	**32.26**
One year ago (January, 1930)	**35.56**
Ten years ago (January, 1921)	**51.98**

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Jan. 7, 1931	Dec. 1930	Oct. 1930	Jan. 1930
PIG IRON				
Bessemer, del. Pittsburgh	$18.76	18.76	19.36	20.76
Basic, valley	17.00	17.00	17.00	18.50
Basic, eastern del. eastern Pa.	17.50	17.50	17.50	19.20
No. 2 foundry, del. Pittsburgh	18.26	18.26	18.46	19.76
No. 2 foundry, Chicago	17.50	17.50	17.50	20.00
*Southern No. 2, Birmingham	14.00	14.00	14.00	14.70
**No. 2X, Virginia furnace	18.25	18.25	18.25	18.25
**No. 2X, Eastern del., Phila.	18.26	18.26	19.26	21.56
Malleable, valley	17.50	17.50	17.80	19.00
Malleable, Chicago	17.50	17.00	17.50	20.00
Lake Superior, charcoal, del. Chi.	27.04	27.04	27.04	27.04
Gray forge, del. Pittsburgh	17.63	17.63	17.83	19.13
Ferromanganese, del. Pittsburgh	89.79	93.29	103.79	104.79

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $12 to $13, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.50	2.50	2.60	2.55
Connellsville foundry, ovens,	3.25	3.50	3.50	3.50
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	30.00	30.50	31.00	33.80
Sheet bars, open-hearth, Pitts.	30.00	30.50	31.00	33.80
Billets, open-hearth, Pittsburgh	30.00	30.50	31.00	33.80
Wire rods, Pittsburgh	35.00	35.50	36.00	40.00

	Jan. 7, 1931	1930 Dec.	1930 Oct.	1930 Jan.
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.90
Steel bars, Chicago	1.70	1.70	1.70	2.00
Steel bars, Philadelphia	1.94	1.89	1.89	2.17
Iron bars, Chicago	1.70	1.70	1.75	2.00
Shapes, Pittsburgh	1.60	1.60	1.60	1.90
Shapes, Philadelphia	1.81	1.76	1.76	1.91
Shapes, Chicago	1.70	1.70	1.70	2.00
Tank plates, Pittsburgh	1.60	1.60	1.60	1.90
Tank plates, Philadelphia	1.80½	1.80½	1.80½	2.05
Tank plates, Chicago	1.70	1.70	1.70	2.00
Sheets, blue anl., No. 13, Pitts.	2.05	2.05	2.15	2.30
Sheets, black, No. 24, Pitts.	2.35	2.35	2.40	2.70
Sheets, gal., No. 24, Pittsburgh	2.90	2.90	3.00	3.35
Sheets, black, No. 24, Chicago	2.50	2.50	2.60	2.90
Sheets, blue anl., No. 13, Chicago	2.20	2.30	2.30	2.50
Sheets, galvanized, No. 24, Chi.	3.05	3.15	3.20	3.55
Plain wire, Pittsburgh	2.20	2.25	2.30	2.40
Wire nails, Pittsburgh	1.90	1.90	2.00	2.35
Tin plate, per base box, Pitts.	5.00	5.00	5.00	5.25
SCRAP				
Heavy melting steel, Pitts.	13.00	12.75	14.80	16.55
Heavy melting steel, eastern Pa.	10.50	11.00	12.00	14.50
Heavy melting steel, Chicago	10.00	10.00	11.55	12.65
No. 1 wrought, eastern Pa.	13.00	13.50	14.25	15.25
No. 1 wrought, Chicago	9.50	10.00	10.95	13.40
Rails for rolling, Chicago	13.00	13.00	14.10	14.65

Sheets

Rebound from Dull December Gives Market Semblance of Activity—Automotives Busier

SHEET PRICES, PAGE 59

Pittsburgh—Sheets are more active following the year-end letdown and producers are in improved condition as regards backlogs as the result of light shipments and an increase in new business during December. Recent specifications have been fairly well distributed, with improved activity at automotive plants reflected in new buying. Orders in practically all cases call for only small lots for prompt shipment. January shipments are expected to show an improvement over December, which was one of the poorest months of the past ten years. Prices are firmer than had been anticipated, with concessions from recent levels noted infrequently. Producers usually quote 2.35c for black sheets, 2.90c to 3.00c for galvanized, 2.05c for blue annealed, 1.90c for blue annealed plates and 3.30c for autobody.

New York—Sheet sellers report continued dullness, but prices are steady. Galvanized sheets are held at 2.90c, Pittsburgh, to jobbers and 3.00c to the general trade. Black sheets are 2.35c, No. 10 blue annealed, 1.90c; and No. 15 blue annealed, 2.05c.

Philadelphia—Sheet specifications have improved. The radio industry is unusually active for this period. Blue annealed are unchanged at 1.90c, Pittsburgh, for heavy gages and 2.05c for light, but the position of blue annealed jobbing mills is increasingly difficult because of competition from wide strip at 1.75c for heavy gages and 1.90c for the light, plus the blue annealed card extras. Galvanized sheets are easy at 2.90c to 3.00c.

Buffalo—Sheetmakers report improved sales and some fair first quarter bookings. Signs point to larger production than in the last quarter of 1930.

Youngstown, O.—Gains are expected to continue in sheet mill operations. Resumption of automotive building already has resulted in broadening incoming specifications. A spotty condition is revealed by sheetmakers' rates of activities this week. Practically all Niles, O., mills are idle, as are the Western Reserve and Liberty mills near Warren, O. But the Brier Hill, Haselton and Campbell mills are operating on a conservatively expanding scale. Next week more district independent mills are expected to go on. Quotations are firm at 2.35c, Pittsburgh, for common black; 1.90c to 2.05c for blue annealed;; 3.30c for autobody, and 2.90c to 3.00c for galvanized.

Cleveland—Automotive customers continue to increase shipping instructions. Fisher Body Co. here is on a weekly basis of 19,000 jobs, compared with 15,000 in December. Producers of metal furniture sheets and users of vitreous enameling stock report a continuation of fairly active orders. Prices continue as firm as they were in December, 2.35c, Pittsburgh, being named on black; 3.30c on autobody and 3.60c on furniture.

Chicago—Public bidding on several projects, including state license plates, discloses fairly stable prices for steel sheets. Chicago delivered prices for No. 24 black sheets are 2.50c to 2.60c, while No. 24 galvanized remain at 3.05c to 3.15c, the minimum prices applying only for large jobber sales and for carload lots and larger. Operating schedules started the week at about 50 per cent.

Cincinnati—Sheet mill production in this district increased to over 50 per cent during the past week, with an upturn in demand. General resistance to forward buying is still noted.

St. Louis—Inquiries and orders for sheets for first quarter are beginning to appear, and shipments are better than expected. All indications point to larger demand this month than in December. Prices are steady.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

SHEET MILL BLACK, NO. 24

Pittsburgh base	2.35c
Philadelphia, delivered	2.64c
Gary, Indiana Harbor	2.45c to 2.55c
Chicago, delivered	2.50c to 2.60c
Birmingham, base	2.50c to 2.60c
St. Louis, del.	2.80½c

TIN MILL BLACK, NO. 28

Pittsburgh, base	2.65c to 2.75c
Gary, base	2.75c to 2.85c

GALVANIZED NO. 24

Pittsburgh, base	2.90c to 3.00c
Philadelphia, delivered	3.19c to 3.29c
Chicago, delivered	3.05c to 3.15c
Gary, Indiana Harbor	3.10c
Birmingham, base	3.15c
St. Louis, del.	3.35½c

BLUE ANNEALED SHEETS NO. 13

Pittsburgh, base	2.05c
Chicago, district mills	2.15c to 2.25c
Chicago, delivered	2.20c to 2.30c
St. Louis, delivered	2.50½c
Philadelphia, delivered	2.34c
Birmingham	2.20c to 2.25c

BLUE ANNEALED PLATES, NO. 9-10

Pittsburgh, base	1.90c
Chicago, district mills	2.00c to 2.10c
Chicago, delivered	2.05c to 2.15c
Philadelphia, delivered	2.19c
St. Louis, delivered	2.35½c
Birmingham	2.05c to 2.10c

AUTOMOBILE NO. 20

Pittsburgh, base	3.30c

FURNITURE NO. 24

Pittsburgh, patent leveled	3.60c

Tin and Terne Plate

Prices per 100-pound box Pittsburgh

Tin plate, coke base	5.00c
Gary, Ind., base 10 cents higher.	
Long ternes, 24, assorted	3.55c
Long ternes, 24, unassorted	3.45c

Wire Products

(To Jobbers-Merchant Trade)
F.o.b. Pittsburgh, Cleveland base

(Per 100 pound keg)

Standard wire nails	$1.90 and 2.00
Cement coated nails	1.90 and 2.00
Galvanized nails	3.90 and 4.00

(Per pound)

Polished staples	2.35c and 2.45c
Galvanized staples	2.60c and 2.70c
Barbed wire, gal.	2.55c and 2.65c
Annealed fence wire	2.05c and 2.15c
Galvanized wire	2.50c and 2.60c

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c to 2.30c
Spring wire	3.20c
Wire, delivered Detroit	2.50c
Nails, delivered Detroit	$2.35

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Rivets

Struc. c.l., Pitts.-Cleve.	2.75c
Struc., c.l., Chicago	2.85c
**7/16-inch and smaller, Pitts.	70; 10 and 5 off
Chi., Cleve.	70 to 70, 10 and 5 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Steel Plates

Base, Pittsburgh	1.60c to 1.65c
Philadelphia, del.	1.80½c to 1.85½c
New York, del.	1.88c to 1.93c
Boston, del.	2.00c to 2.05c
Chicago, base	1.70c to 1.75c
Cleveland, delivered	1.78½c to 1.83½c
Lackawanna, N. Y., base	1.70c to 1.75c
Birmingham, base	1.75c to 1.80c
Coatesville, Pa., base	1.70c to 1.75c
Pacific Coast, c.i.f.	2.10c to 2.20c
St. Louis, del.	1.95½c

Structural Shapes

Base, Pittsburgh	1.60c to 1.65c
Philadelphia, del.	1.81c
New York, del.	1.85½c to 1.90½c
Boston, del.	1.88½c to 1.98½c
Chicago, base	1.70c to 1.75c
Cleveland, delivered	1.78½c to 1.83½c
Lackawanna, N. Y., base	1.70c to 1.75c
Birmingham, base	1.75c to 1.80c
Pacific Coast, c.i.f.	2.15c to 2.25c

Bars

SOFT STEEL

Pittsburgh, base	1.60c to 1.65c
Chicago, base	1.70c to 1.75c
Birmingham, base	1.75c to 1.80c
Lackawanna, N. Y., base	1.70c to 1.75c
Pacific Coast, c.i.f.	2.25c
Cleve. base, local del.	1.65c
Do, outside delivery	1.65c
Philadelphia, del.	1.94c
New York, delivered	1.93c to 1.98c
Boston, delivered	2.00c to 2.05c
Pittsburgh, cold finish	1.75c to 1.80c
Pittsburgh, forg. qual.	1.85c to 1.90c

RAIL STEEL

Chicago Heights	1.60c to 1.65c
Eastern mills	1.65c

IRON

Chicago, base	1.70c to 1.75c
New York, delivered	2.08c
Philadelphia, delivered	1.94c to 1.99c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pitts., billet cut lengths	1.90c to 2.00c
Stock lengths, mill	1.65c to 1.75c
Chi. billet	1.70c to 1.80c
Chi., rail steel	1.50c to 1.60c
Philadelphia, cut lengths	1.99c to 2.04c

Cold-Finished Steel Bars and Shafting

Base, Pittsburgh, Chicago, Buffalo and Cleveland	2.10c
Shafting, turned and ground, mill	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel
Sheets, 35c; plates 31c; bars 28c

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to $6.75 off
Carloads, Chicago dist.	6.70 to 6.80 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bar Base is 2.65c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	1.25-1.75 Ni.	1.05
2100	0.55	5100 .80 - 1.10 Cr.	0.45
2300	1.50	51.00 Cr. spring	0.20
2500	2.25	6100 bars	1.20
3100	0.55	6100 Spring	0.95
3200	1.35	Cr., Ni., Van.	1.50
3300	3.80	Carbon Van.	0.95
3400	3.20	9250 (flats)	0.25
4100 .15 to .25 Mo.	0.50	9250 (rds., sq.)	0.50
4600 .20 to .30 Mo.			

Strip, Hoops, Bands

Hot strip, to 6-in., Pitts.	1.65c to 1.70c
Hot strip 6 1/16 to 24-in. Pitts.	1.55c to 1.60c
Hot strip, bands 6 in. and under, Chicago	1.75c to 1.80c
Do. 6 1/16 to 24 in.	1.65c to 1.70c
Cooperage hoop, Pitts.	1.90c to 2.00c
Do, Chicago	2.00c to 2.10c
Cold rolled strip, Pitts., Cleve., 3 tons, over	2.25c to 2.35c
Worcester, 3 tons, over	2.50c

Rails, Track Material

Standard bess. and open hearth rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$24.00 to 28.00
Light rails, 25-45, mills	$34.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.80c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.80c
Spikes boat, barge, Pitts.	3.00c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Do. standard, jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plate, mills	$39.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread 73 off

Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.

Eagle list 73 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts 73 off

Tire bolts, 60, 10 and 10 off.

Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.

Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished 73 off

HEXAGON CAP SCREWS

Milled 80-10-10-5 off

Upset 1 in. diam. and smaller 85-10 off

SQUARE HEAD SET SCREWS

Milled 80-5 off

Upset 1 in. and smaller 80-10-5 off

Upset, larger than 1 in. 80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l., Pittsburgh do, less carloads, 5 kegs or over, 2.65c; and less than 5 kegs, 2.80c. 2.40c

Chain, BB, BBB, 9/16-1½ in. 33 1/3 off

Sheet piling, Pitts. 2.00c

Bars

Specifications Improve and Prices Are Firmer—First Quarter Tonnage Well Covered

BAR PRICES, PAGE 59

Chicago — Producers of bars, shapes and plates are quoting 1.75c Chicago, to buyers without unfilled contracts or uncompleted shipments on 1.70c sales. To odd-lot buyers of mixed carloads 1.75c has governed recent spot sales. Contracts, covering also semifinished and rails, have been the best in many weeks. A rather sharp upturn in specifications is noted, as was to be expected following inventories. One producer reports the best all-around run of specifications since last July. Steel for automotive, road machinery and excavating equipment builders has led in demand. Parts makers are getting moderately heavier releases. Alloy bar mills are climbing toward a 50 per cent operating rate, while other bar mills are 40 to 45 per cent engaged.

New York—Bar demand is still of insufficient volume to afford a real test of the 1.65c, Pittsburgh, price. However, the general run of new business appears at this figure, with the larger consumers able to contract for first quarter at 1.60c, Pittsburgh. Demand is showing slight improvement, although the forging interests continue inactive.

Philadelphia—Fully 95 per cent of steel bar tonnage for first quarter is under contract. Steel bar specifications show a material improvement, based on better consumption. All mills now are quoting 1.65c, Pittsburgh, and 1.60c apparently has disappeared as applied to new business. A number of first quarter contracts are on books at 1.65c. Iron bars are firmer at 1.65c to 1.70c, Pittsburgh, with demand slightly increased.

Pittsburgh—Steel bar producers now are quoting 1.65c, Pittsburgh, on new tonnage. First quarter contracting was fairly general at 1.60c and although the $1 advance will be only partially realized on first quarter shipments, the market is in a stronger position than in a number of months. Specifications showed a moderate improvement during the past week and for some producers were better than combined tonnage of the two preceding weeks. Automotive needs share largely in the improved demand.

Youngstown, O.—Some expansion in steel bar business has been noted, sufficient to put a few more mills into operation. January shipments now appear likely to exceed December, and possibly also November. Bars are firm at 1.65c, Pittsburgh, for first quarter delivery. Contracts, however, covering needs of the quarter are slow in appearing but prospects are more cheerful.

Cleveland—The greatest favorable factor in the local bar market is an unanimity of opinion by sellers that improved sentiment is experienced among the consuming trade. Forward tonnage since the turn of the year has not been sufficient to give genuine test to the 1.65c, Pittsburgh, price. It is reported that local mills Jan. 5 named 1.70c, base, for both local and outside delivery but no orders are known to have been placed at that figure.

Cold-Finished Bar Price Minimum Now Is 2.10c

Cold Finished Prices, Page 59

Pittsburgh — Producers of cold-finished steel bars have announced minimum price of 2.10c, Pittsburgh, on all new business. First-quarter contracts were taken at 2.00c and 2.10c so that new price represents advance of $2 a ton on the minimum figure. Specifications are slightly heavier with better orders coming from automotive interests. Miscellaneous consumers also are taking larger tonnages. Stocks of all users were sharply restricted at the end of 1930. Moderate gain in shipments is looked for this month.

Cleveland—Cold-finished bar orders show some increase, traced primarily to slightly better operations among automobile parts makers, and appliance manufacturers. At best, however, individual orders are small. The 2.00c to 2.10c, Cleveland, price prevails.

Plates

Sales Still Limited to Small Lots—Several Good Ship and Barge Awards—Prices Steady

PLATE PRICES, PAGE 59

New York—The plate market at 1.70c to 1.75c, Coatesville, Pa., is still subject to test, pending a more active demand. First quarter contracting appears to be largely at 1.75c, except to the largest consumers. Formal announcement is made of the award of the four Pacific Mail vessels to the Federal Shipbuilding Co. As previously noted, these vessels will require 6000 tons of plates each. The department of water supply, gas and electricity has opened bids on about 6000 tons of steel pipe for installation in the Queens. Except in one instance plate prices as bid on the New York Central requirements were firm at 1.65c, Pittsburgh, or equivalent. The exception was $1 a ton less. While the New York Central opening was for first half requirements, bidders generally based their prices on first quarter delivery only. One seller added $1 a ton for second quarter shipment.

Philadelphia — Plates continue 1.70c to 1.75c, base, Coatesville, Pa., on new business. Apparently 1.70c is absolute minimum as the largest buyers now are paying it. The first quarter starts with the largest number of consumers under contract than noted at this time in several years, showing they take the firmer price trend seriously. Demand is fair. Mills are operating at 30 to 55 per cent of finishing capacity.

Pittsburgh—Plate demand continues around the pre-holiday rate but is slightly better than during the latter part of December. Producers are quoting 1.65c, Pittsburgh, on new business following fairly heavy coverage for first quarter at 1.60c. The Inland Waterways Corp. has offered orders for 40 barges, on which bids closed Dec. 30, to several builders. This equipment involves 25,000 tons of plates and shapes.

Cleveland—Plate buying continues at the December rate, small lots predominating. No large tank or ship repair requirements are up at present. While Lima Locomotive Works is understood to be fully committed on its plate need for the ten locomotives recently awarded to it by Boston & Albany, between 300 and 400 tons, the purchase has not been concluded. Customers seem reconciled to a 1.65c, Pittsburgh, open market quotation, although the majority covered by contracts for the quarter at 1.60c, Pittsburgh, are showing no anxiety to get their

specifications in at an early date.

Chicago — Plate shipments for pipe line work are continuing at 3000 to 4000 tons weekly. Mills are quoting only 1.75c, Chicago, on new business. Southern California Gas Corp., subsidiary of the Pacific Lighting Corp., and Southern California Edison Co. are planning a joint natural gas pipe line from the Kettleman Hills in California to Los Angeles, costing $8,000,000 to $10,000,000. Plate mills are averaging about 45 per cent. About 2500 tons in miscellaneous oil storage tank inquiry is appearing.

Contracts Placed

250 tons (sheet piling) bridge, Stone Harbor, N. J., to Bethlehem Steel Co., Bethlehem, Pa., through S. Bader, Atlantic City, N. J., general contractor.

125 tons, lighthouse tender for government, San Francisco, to Moore Drydock Co., Oakland, Cal.

Contracts Pending

Unstated tonnage, 250-ton all-steel open lighter for Puget Sound navy yard, Bremerton, Wash.

10,000 tons, gate hoists and other metal work, Hoover dam, power house and works, Boulder canyon project, Colorado river; to be furnished by United States government; bids on general contracts to be opened March 4 by bureau of reclamation, Denver.

Tin Plate Specifications Increase Moderately

Tin Plate Prices, Page 59

Pittsburgh — Tin plate specifications show a mild increase. January ordinarily is a slow month and little improvement is looked for in operations over the next three or four weeks. Production currently averages 50 to 55 per cent. Practically all of the larger buyers have contracted for the first half of 1931, with the market continuing $5, Pittsburgh, per base box.

New York—Except for the Standard Oil Co. of New Jersey, all leading consumers of tin plate here have closed on their first half requirements. The Standard is expected to close in the next few days. Export demand is quiet. One leading seller says export demand in the first half of 1930 was normal and in the second half was off approximately 35 per cent. The current market is unchanged at $5, Pittsburgh, per base box.

Philadelphia—Tin plate specifications show decided improvement.

The National Safety council will hold its twentieth annual safety congress at Hotel Stevens, Chicago, Oct. 12-16, 1931.

Railroads

Rail Interest Sustained—Car Awards Few, Inquiry Limited —Rail Mill Operations Increase

TRACK MATERIAL PRICES, PAGE 59

Chicago—Producers of steel railroad material feel that immediate purchases may be affected by the government railroad consolidation plans. They point out, however, that eventually great economies may be assured and that improved conditions should prevail in that purchasing should continue in strong hands. Chicago, Milwaukee, St. Paul & Pacific is expected out soon with an inquiry for 40,000 tons of rails. Rock Island also is expected to inquire soon for 35,000 to 40,000 tons. Some rails recently placed are scheduled for early shipment and local mills have stepped up rail mill operations to 50 to 55 per cent, a gain of 5 points since the holidays. About 1500 tons of track accessories has been placed. An indefinite tonnage is pending.

New York—Car buying remains slack. Bessemer & Lake Erie's inquiry for 1000 to 1200 cars is the only pending list of importance. The Chicago & Eastern Illinois list of 800 cars is not active.

Philadelphia—Light rail specifications by anthracite mines are active. The price usually is $38.28 a gross ton, delivered to the anthracite district for new billet rails or $36.90, delivered, on rerolled rails. These figures, however, are shaded materially on desirable business.

As yet no action has been taken by Pennsylvania on its rail inquiry, 150,000 to 200,000 tons.

Boston—Boston & Maine has placed a heavy track accessory order with Bethlehem Steel Co.

Buffalo—Large rail orders booked recently by Bethlehem Steel Co., have been allotted to its Lackawanna, N. Y., plant. The rail mill there now is on double turn. This scale of production may continue throughout this month.

Pittsburgh — Markets for rails, track material, and freight cars continue quiet. New inquiry is limited and action is lacking on pending work. Specifications for fastenings are dull. Pennsylvania is starting work on the 1500 freight cars it is building for which steel recently was awarded, 46,500 tons, as noted in STEEL of Jan. 1.

Birmingham, Ala.—Orders aggregating in excess of 150,000 tons of rails and accessories permit the resumption of Ensley, Ala., rail mill after a shutdown since Sept. 18. Other contracts in sight make producers hopeful for several months' work.

Car Orders Placed

Canadian National, 1700 50-ton steel frame cars to Canadian Car & Foundry Co., and 1000 similar cars to National Steel Car Co.

Northern Pacific, 1000 box cars to Pacific Car & Foundry Co., San Francisco.

Rail Orders Placed

Central Railroad of New Jersey, 13,249 tons, 100 and 130-pound rails, to Bethlehem Steel Co., Bethlehem, Pa. STEEL of Dec. 25 reported indefinite tonnage for this road as going to that mill.

Delaware, Lackawanna & Western, 3000 tons, 130-pound rails with fastenings, to Bethlehem Steel Co., Bethlehem, Pa.

Duluth, Missabe & Northern, 1600 tons, to Illinois Steel Co., Chicago.

Louisville & Nashville, 50,750 tons of rails and approximately 10,000 tons of track fastenings, etc., to Tennessee Coal, Iron & Railroad Co., Ensley, Ala.

Rail Orders Pending

Chicago, Milwaukee, St. Paul & Pacific, 40,000 tons of rails; inquiry soon.

Chicago, Rock Island & Pacific, 35,000 to 40,000 tons of rails; inquiry soon.

Delaware, Lackawanna & Western, about 10,000 tons of rails, tie plates, angle bars, spikes, etc.; bids close Jan. 12.

Southern Pacific, 60,000 tons.

Machinery Is Bulk of Soviet Purchases Here

Industrial and agricultural machinery accounted for more than 80 per cent of Soviet purchases in the United States in the fiscal year 1929-30, totaling $149,223,000, according to the *Economic Review of the Soviet Union*, published by the Amtorg Trading Corp., New York.

Soviet purchases in the United States in 1929-30 were 38.6 per cent greater than in the preceding year. In the seven years since the resumption of regular trade, the Soviet claims to have bought $750,777,000 worth of products in the United States.

Soviet purchases in the fiscal year 1929-30 included industrial equipment for the metal manufacturing industry costing $2,236,000, for the machine building industry $18,279,000, for the mining industry $1,751,000 and for shipbuilding and marine equipment $1,419,000.

Structural Shapes

Fairly Numerous Awards Led by 6950-Ton Bridge and 13,300-Ton Subway—Elevated Roadway Still Pends in East—Boston's Postoffice Up

STRUCTURAL SHAPE PRICES, PAGE 59

New York—Most large buyers of plain structural material covered at 1.70c, eastern mill, or 1.60c, Pittsburgh. Efforts to establish a $1 increase for the first quarter have not been severely tested but the test is expected in the next ten days. Definite action will be taken Jan. 16 on the general contract for section three, west side elevated highway, 15,000 tons.

Boston—Awards have been small but larger work lies immediately ahead. Boston's postoffice job may reach 10,000 tons or more.

Philadelphia—Eastern shape mills operate 45 to 50 per cent of finishing capacity, with somewhat improved bookings. Shape market is the firmest seen here in years. Most shape buyers now are under contract for first quarter at 1.70c, base, eastern mill, for standard shapes but principal mills now are firm at 1.75c, mill. Thin web wide flange sections now are 1.75c, Bethlehem. Fabricators believe higher shape prices will result in a more stable fabricated steel market. In practically all cases, old protections on pending jobs have been withdrawn.

Buffalo—Some good structural business is in sight for the first quarter. Fabricators look for a much improved situation in early spring.

Pittsburgh—Fabricated structural steel remains quiet. Prospective work is fair but inquiry is slow to appear. The market usually is quoted 1.65c, Pittsburgh, on new business although considerable tonnage has been entered on first quarter contracts at 1.60c.

Cleveland — Several structural awards, 500 tons or less at a time, have been made, including a local high school, a plant in Wheeling, W. Va., 500 tons each; a local factory, 355 tons, a 350-ton state bridge at Painesville, O., a 200-ton state normal school at Geneseo, N. Y., and a 500-ton state forestry building at Syracuse, N. Y. The market is devoid of worthwhile inquiry. Specifications for plain material are scattered, showing no increase from the early December rate. The 1.65c, Pittsburgh, open market figure is holding, contract tonnage being billed at 1.60c.

Chicago—About 14,000 tons of fresh structural steel inquiry is out, and about 10,000 tons has been awarded, including Ogden avenue bridge, 6950 tons. Long range prospects are good. Mills have a number of unfilled 1.70c, Chicago, contracts and incompleted shipments, but are naming 1.75c as the base for fresh contracts. Mills, operating less than 30 per cent, have little work for immediate shipment.

Birmingham, Ala. — Fabricators maintain 5-day week schedules. Two jobs, 150 tons apiece, were closed. Several other contracts are in sight.

Contracts Placed

13,300 tons, subway sections 10 and 11, route 108, Queens, N. Y., to Hay Foundry & Iron Works, New York; Triest Contracting Co., New York, awarded general contract by board of transportation, New York.

6950 tons, Ogden avenue bridge, Chicago, to American Bridge Co., Pittsburgh.

2500 tons, seven buildings, General hospital, Queens, N. Y., to A. E. Norton Inc., New York, John Kennedy & Co., general contractor.

2000 tons, Iowa-Des Moines National Bank building, Des Moines, Iowa, to Pittsburgh-Des Moines Steel Co., Des Moines.

1900 tons, Pennsylvania state bridge at Kittanning to McClintic-Marshall Co., Pittsburgh.

1750 tons, auditorium, Pasadena, Calif., to Consolidated Steel Corp., Los Angeles.

1000 tons, bridge work for Union Pacific railroad, 600 tons to American Bridge Co., Chicago, and 400 tons to McClintic-Marshall Co., Chicago.

1000 tons, 17-story apartment, West Ninety-sixth street, New York, to Dreier Iron Works, New York.

1000 tons,, city bridge over St. Charles river, Quebec, Que., to Eastern Canada Steel & Iron Works Ltd., Quebec.

Awards Compared

	Tons
Awards this week	**41,131**
Awards last week	**14,635**
Awards two weeks ago	**36,021**
Awards this week in 1930	**24,485**
Av. weekly awards, 1930	**35,242**
Av. weekly awards, 193	**27,883**
Av. weekly awards, Dec	**29,804**
Tot. awards to date, 1930	**31,654**
Tot. awards to date, 1931	**55,766**

930 tons, Earl Carrol theater, New York, to Bethlehem Fabricators Inc., Bethlehem, Pa., instead of to Bethlehem Steel Co., as noted in STEEL of Jan. 1.

800 tons, viaduct over Indiana Harbor Belt Line railroad, La Grange, Ill., to Gage Structural Steel Co., Chicago.

700 tons, St. Luke's hospital, Newburgh, N. Y., to Levering & Garrigues Co., New York; George A. Fuller Co., New York, general contractor.

610 tons, overhead crossing, Columbus, Nebr., state job, to Paxton & Vierling Iron Works, Omaha, Nebr.

600 tons, plant building at Canton, O., for United Engineering & Foundry Co., Pittsburgh, to Guibert Steel Co., Pittsburgh.

580 tons, Arsenal high school, Pittsburgh, to McClintic-Marshall Co., Pittsburgh.

530 tons, high school, Port Chester, N. Y., to Just Structural Engineering Co., White Plains, N. Y.; Rathgeb-Walsh Co., general contractors.

520 tons, prison building, Auburn, N. Y., to Kellogg Structural Steel Co., Buffalo; Wark Co., Philadelphia, general contractor.

500 tons, packing plant at Honolulu, T. H., for Libby, McNeil & Libby, Chicago, to unstated fabricator.

500 tons, James Ford Rhodes junior high school, Cleveland, to Kilroy Structural Steel Co., Cleveland.

500 tons, cold rolling mill, Wheeling Steel Corp., Wheeling, W. Va., to Wheeling Structural Steel Co., Wheeling.

500 tons, state forestry building, Syracuse, N. Y., to McClintic-Marshall Co., Pittsburgh.

430 tons, span bridge at Waterloo, Iowa, to Clinton Bridge Works, Clinton, Iowa.

400 tons, highway bridge at Berlin, Wis., to Worden-Allen Co., Milwaukee.

355 tons, factory, Yoder Co., Cleveland, to Truscon Steel Co.

350 tons, Grand river bridge, Painesville, O., to Burger Iron Co., Akron, O.; Purdey Construction Co., Mansfield, O., general contractor.

350 tons, 40-ton gantry crane and runway for Mare Island, Calif., to Judson-Pacific Co., San Francisco.

325 tons, shop at naval base, San Diego, Calif., to McClintic-Marshall Co., Los Angeles.

300 tons, 75-foot plate girder spans for Western Pacific railroad, San Francisco, to Columbia Steel Co., San Francisco.

271 tons, bridge over Isthmus Inlet, Coquille, Oreg., to unstated interest.

250 tons, building, Gulf Refining Co., Philadelphia, to Belmont Iron Works, Philadelphia.

200 tons, state normal school, Geneseo, N. Y., to McClintic-Marshall Co., Pittsburgh.

200 tons, school, Mamaroneck, N. Y., to Just Structural Engineering Co., White Plains, N. Y.; Acampora Bros. Inc., general contractor.

200 tons, apartment, Woodmere, New York, to Dreier Iron Works, New York.

185 tons, chemical plant, Stege, Calif., to Herrick Iron Works, Oakland, Calif.

175 tons, tipple and crusher, Birmingham Slag Co., Ensley, Ala., to Ingalls Iron Works Co., Birmingham, Ala.

150 tons, hangar, municipal airport, Birmingham, Ala., to Virginia Bridge & Iron Co., Birmingham.

150 tons, postoffice, Clarksburg, W. Va., to Ingalls Iron Works Co., Verona, Pa.

150 tons, 2-story school and dormitory, New York Institute for Education of the Blind, Pelham Parkway, New York, to Dreier Iron Works, New York; Cauldwell-Wingate Co., general contractor.

150 tons, highway bridge in Florida, to Ingalls Iron Works Co., Birmingham, Ala.

150 tons, exhibit building, El Centro, Calif., to Consolidated Steel Corp., Los Angeles.

140 tons, federal building, Clarksburg, W. Va., to Ingalls Iron Works Co., Verona, Pa.

140 tons, bridge over Richardson Bay, Marin county, Calif., to Moore Drydock Co., Oakland, Calif.

125 tons, two 6-story apartments, Morris and Walton avenues, both near 172nd street, Bronx, N. Y. to Empire Architectural Iron Works, Bronx, N. Y.; Landis Construction Co., builder.

125 tons, bridge spans for Chicago & North Western railroad, to American Bridge Co., Pittsburgh.

110 tons, 6-story apartment, Thirty-fourth avenue and Forty-fourth street, Long Island City, N. Y., to Emilnick Iron Works, Astoria, N. Y.

110 tons, telephone building, Framingham, Mass., to A. O. Wilson Structural Co., Cambridge, Mass.

100 tons, hospital, Gulfport, Miss., to Virginia Bridge & Iron Co., Birmingham, Ala.

100 tons, canning plant, Columbia, Miss., to Decatur Iron & Steel Co., Decatur, Ala.; Dye & Mullings, general contractors.

100 tons, state bridge over Pennsylvania railroad tracks, Arundel county, Maryland, to Phoenix Bridge Co.

100 tons, Brown university building, Providence, R. I., to unstated fabricator.

Contracts Pending

10,000 tons, two mill buildings, Inland Steel Co., Indiana Harbor, Ind.

8000 to 10,000 tons, postoffice, Boston.

5300 tons, Hoover dam, power house and appurtenant works, Boulder canyon project Colorado river; partial requirements, to be furnished by United States government; bids on general contracts to be opened March 4 by bureau of reclamation, department of interior, at Denver.

5000 tons, war memorial, San Francisco.

4000 tons, assembly plant at Seattle for Ford Motor Co., Detroit; revised bids being taken.

2850 tons, subway, Newark, N. J.; bids in.

2500 tons, contract No. 1, Pennsylvania avenue improvements, Philadelphia; new bids Jan. 14.

2000 tons, bridge over Beaver river, Saskatchewan, for Winnipeg division of Canadian National Railways.

1500 tons, Chapman store, Milwaukee.

1300 tons, postoffice and federal building, Oklahoma City, Okla.

1300 tons, Ward island anchorage, Triboro bridge, New York.

1143 tons, bridgework, Red River Parish, La., Louisiana Highway commission.

1000 tons, staff building, medical center, Jersey City, N. J.

1000 tons, additional trusses for Mill Creek and Spring Grove arches, Cincinnati Union Terminal Co., Cincinnati.

1000 tons, postoffice, Springfield, Mass.; bids Jan. 23.

1000 tons, railroad Y.M.C.A. East Forty-seventh street, New York.

1000 tons, Washington junior high school, Rochester, N. Y.; bids in.

1000 tons, plant, General Electric Co., Cleveland.

700 tons, highway bridge at Marksville, La.

684 tons, bridgework, Avoyelles Parish, La., Louisiana Highway commission.

600 tons, bridges, Western Pacific railroad, San Francisco; bids Jan. 16.

600 tons, building, New England Telephone Co., Boston.

550 tons, remodeling Delaware river bridge, Frenchtown, N. J.

530 tons, wharf, board of commissioners, New Orleans.

500 tons, two theaters at Hamilton and Middletown, O., for Midham Corp., Cincinnati; general contracts to Midland Construction Co., Cincinnati.

500 tons, highway bridge over Delaware river near Trenton, N. J.

500 tons, Franklin viaduct, Michigan City, Ind.

500 tons, addition to Union Trust Co. building, Cincinnati.

450 tons, state highway bridges at Waterloo, Iowa.

400 tons, telephone building, Watertown, Mass.

400 tons, highway bridges in Missouri, Kansas and Mississippi.

365 tons, bridge over Russian river near Jenner, Calif.; Pacific Coast Engineering Co., Oakland, Calif., low.

350 tons, Barrington-Wilton building,

(*Concluded on Page 79*)

Concrete Bars

Schools, Sewers, Highways Contribute to Heavy Total Awards—Two 3000-ton Jobs Lead Western Awards with 1800-ton Subway, Philadelphia—Prices Grow Firmer

REINFORCING BAR PRICES, PAGE 59

New York—Concrete reinforcing bar prices are firm on a basis of 1.90c to 2.00c, cut lengths, Pittsburgh. Warehouse shipments by New York distributors have a firm minimum of 2.35c for larger tonnages. Several jobs up for some weeks have been closed, notably bridges, sewers and highways.

Boston—Concrete bar contracts were few at the year end. Newton, Mass., awarded 115 tons for a culvert and 150 tons represented small jobs. Approximately 4000 tons, however, is pending, including 1500 tons for Boston's postoffice, 1000 tons for Massachusetts roadwork, 1000 tons for a telephone plant at Watertown, Mass., and a 350-ton postoffice at Springfield, Mass. Most of these will be closed this month.

Philadelphia—A leading concrete bar seller has announced a price increase, effective Jan. 10, going to 1.65c, Pittsburgh, on mill lengths in carloads, and 1.90c, Pittsburgh, on cut lengths in carloads. The latter price compares with the recent 1.70c to 1.75c, Pittsburgh, range on cut lengths.

Pittsburgh—Concrete bars are more active. Incoming tonnage for some producers is better than in 30 days or more. Local awards continue light.

Buffalo—Reinforcing bar demand is small and no large tonnage is reported pending.

Chicago—Road work leads in importance in reinforcing bars. Minnesota placed about 3000 tons, and about 2000 tons each is pending in Louisiana and Tennessee. Building awards are light. Prices for both billet and rail steel bars are nominal.

Birmingham, Ala.—Numerous small lots of concrete bars are being booked. Prospects are for steady operations. Road building is calling for fairly large tonnages. Connors Steel Co. has accumulated some backlogs and is on a good operating basis.

Awards Compared

	Tons
Awards this week	13,554
Awards last week	664
Awards two weeks ago	3,342
Awards this week in 1930	3,175
Av. weekly awards, 1930	6,990
Av. weekly awards, 1930	7,109
Average weekly awards, Dec.	3,937
Total awards to date, 1930	5,149
Total awards to date, 1931	14,218

Contracts Placed

3000 tons, Ogden avenue improvement, Chicago, to unstated fabricator.

3000 tons, road work for Minnesota highway commission, to several unstated mills.

1800 tons, Locust avenue subway, Philadelphia, to Truscon Steel Co., Youngstown, O., through Golder

(*Concluded on Page 67*)

Strip

Consumers Increase Demands as Their Customers Take Larger Lots—Prices Stand Firmly

STRIP PRICES, PAGE 59

Pittsburgh—Strip specifications have improved moderately, following quiet during the latter part of December. Automotive tonnage is slightly heavier but confined to small individual orders. Prices are well maintained at 1.55c to 1.60c and 1.65c to 1.70c for hot strip and 2.25c to 2.35c for cold strip. Mill operations show little change, continuing about 35 per cent for hot mills and 20 to 25 per cent for cold mills.

New York—Profound dullness prevails in strip, with prices untested at 1.55c, Pittsburgh, for wide hot strip and 1.65c for narrow. Cold strip is held nominally 2.25c, Pittsburgh.

Youngstown, O.—Makers of hot and cold-rolled strip report an encouraging volume of new business this week. Strip users are more liberal in specifications. Both the Sharon Steel Hoop mills and Trumbull works of the Republic Steel Corp. have increased operating rates. Hot strip is 1.65c to 1.70c, Pittsburgh, while cold-rolled is 2.25c to 2.35c, Pittsburgh and Cleveland.

Cleveland—With a small size increase in orders for hot strip from automotive customers, stamping plants, and others, strip steel producers are feeling more hopeful. As yet they are not increasing their operations much from the December rate but expect to be on a higher basis before the end of the month. Small lot orders are coming through for cold strip steel. Quotations are unchanged at 1.55c and 1.65c, Pittsburgh, respectively on wide and narrow hot, and 2.25c, Cleveland, on cold, with some trying to get 2.35c on small lots.

Chicago—Hot-rolled strip producers report that no sales of the narrower widths have been made under 1.75c, Chicago. The range for 6-inch hot-rolled strip and under is 1.75c to 1.80c, Chicago. Wide hot-rolled strip remains at 1.65c to 1.70c. Two automobile accounts have released fairly good tonnages in this territory.

Warehouse Sales Reflect Slight Post-Holiday Gain

Warehouse Prices, Page 84

New York—With the close of inventory season, warehouse buying is showing some improvement. Trading is still far from brisk, but jobbers are confident this month will prove good. Prices are unchanged.

Philadelphia — Warehouse sales show a slight improvement. Prices are unchanged and firm.

Buffalo—Holidays made the usual inroads into iron and steel sales by warehouses. Jobbers hope small stocks which inventories reveal will increase January sales above average of recent months.

Pittsburgh—December sales from some warehouses showed a slight increase over November. A mild gain is noted since the turn of the year. Prices are unchanged and generally steady.

Cleveland—With completion of inventories consumers' orders are appearing with somewhat more frequency. Demand for bars has been stepped up, but little improvement is noted in sheets and strip. Structurals are practically at a standstill. Prices are firm.

Detroit—Orders have been large seasonally though total volume is small. Business held up encouragingly over the holidays without the severity of recession expected. Prices are unchanged.

St. Louis—Last half of December business represented close to the low ebb on the present recessionary movement. Outlook for shipments and sales this month, however, is very decidedly better. There has been fair specifying by the manufacturing trade on a variety of commodities, and some of the more important consumers show more signs of interest.

Cincinnati — Warehouse demand remains quiet but jobbers are confident orders will show improvement over November and December. Quotations are steady.

Operations Improve in All Districts This Week

Youngstown, O.—Steelmaking in this district is up two points to 39 per cent of capacity this week. Advances of 10 points in both Republic and Newton plant operations were the most favorable development. The former's operations are at 30 instead of 20 per cent last week. Addition of a blast furnace to the active list, resumption of production in butt and lap-weld departments and addition Jan. 6 of three open hearths at Massillon account for Republic's increase. Autobody sheet takers benefit Newton Steel and account for its rise. Carnegie and Sheet & Tube schedules are unchanged this week at 50 and 35 per cent, respectively. Sharon sheet operations have suffered a loss this week, and there is also temporary suspension at Empire's Falcon works.

Sheet mill schedules, excluding Newton, are staggered with production at little more than a fourth capacity. Open-hearth production is unchanged with 17 furnaces melting for independents. Bar mill operations are somewhat higher.

Philadelphia—Ingot output of one large eastern mill is 47 per cent of capacity this week; other mills range from 30 to 50 per cent, making the eastern average 42 per cent. Improvement embraces practically all finished products, except plates whose production ranges from 30 to 55 per cent. Shapes are firmer at 45 to 50.

Buffalo—District steelworks' operations advanced this week to 46 per cent of open-hearth capacity. This is a 24 point gain from last week. Some rail and bar mills have been placed on double turn.

Pittsburgh—Ingot output is higher at over 40 per cent. Finishing mill schedules also show an improvement, with sheet production at 35 to 40 and tin plate 50 to 55. Strip continues around 35 with pipe higher at 35.

Cleveland—Both Corrigan, McKinney and Otis increase open hearths active to seven each, but Newburgh works of American Steel & Wire Co. is down to three furnaces active. A 50 per cent rate, or 17 of the district's 34 open hearts pouring this week, is a gain of 2 points over last week. Corrigan, McKinney adds a blast furnace at the end of the week, making three stacks in blast.

Chicago—Ingot output is on a 35 to 40 per cent basis. The leading interest has banked a steelworks blast furnace at South Chicago and one at Gary for a brief period. This leaves 12 of 36 steelworks blast furnaces active. Rail mill operations have been stepped up 5 points to 50 to 55 per cent.

Birmingham, Ala.—Resumption at mills of Gulf States Steel Co. and Tennessee Coal, Iron & Railroad Co. after the holiday did not bring operations above 35 per cent. Latter company's rail mill at Ensley resumes Jan. 12.

Concrete Bars

(*Concluded from Page 63*)

Construction Co., Philadelphia.

650 tons, dam and spillway, Brown county water improvement district No. 1, Brownwood, Tex., to Southern States Steel Corp., Dallas, Tex.; Standard Paving Co., Fort Worth, Tex., and Tulsa, Okla., general contractor; D. W. Ross, engineer of district; 19,000 square feet steel sheet piling still pending.

600 tons, apartments, Los Angeles, to unstated fabricators.

500 tons, auditorium, Pasadena, Calif., to Concrete Engineering Co., Los Angeles.

400 tons, paving near Burley, Idaho, to unstated fabricator.

350 tons, warehouse, H. C. Bohack Co. Inc., Long Island City, N. Y., to Carroll-McCreery Co. Inc., Brooklyn, N. Y.

300 tons, highway route 10, section 1, Hanover to Whippany, N. J., to Igoe Bros., Newark, N. J.; Jannarone Construction Co., general contractor.

250 tons, highway route RS-1, section 2, New Jersey, to Stulz-Sickles Co., Newark, N. J.; Kuchar Bros., subcontractors.

250 tons, mausoleum, Compton, Calif., to Soule Steel Co., Los Angeles.

209 tons, classroom building, University of Texas, Austin, Tex., to Concrete Engineering Co., New York; 30 tons structural steel to Southern Ornamental Iron Works, Dallas, Tex.; Robert E. McKee, El Paso, Tex., general contractor and construction engineer.

200 tons, store, Eighth and Wall streets, Los Angeles, to Concrete Engineering Co., Los Angeles.

200 tons, sanitation plant at Springfield, Ill., to unstated fabricator.

200 tons, (mesh) office building, 326-46 West Forty-second street, New York, to Wickwire-Spencer Steel Co.; Starrett Bros. & Eken Inc., general contractor.

185 tons, high school, Port Chester, N. Y., to Concrete Steel Co., New York; Rathgeb-Walsh Co., Port Chester, general contractor.

130 tons, school of commerce and finance, St. Louis university, St. Louis, to Missouri Rolling Mill Corp., St. Louis.

125 tons, postoffice, Spartanburg, S. C., to Connors Steel Co., Birmingham, Ala.; 57 tons of structural steel to Bristol Steel & Iron Works, Bristol, Va.; Algernon Blair, Montgomery, Ala., general contractor.

125 tons, high school, Mamaroneck, N. Y., to J. T. McCoy Co., New York; Acampora Bros., Inc., general contractor.

125 tons, public school No. 103, to Carroll-McCreery Co. Inc., Brooklyn, N. Y.

125 tons, gymnasium, Rutgers university, New Brunswick, N. J., to New Jersey Rolling Mills, Ridgefield, N. Y.

115 tons, culvert, Newton, Mass., to Northern Steel Co., Boston.

115 tons, 4-story addition to office building, Phillips interests, Tulsa, Okla., to Capitol Steel & Iron Co., Tulsa, Okla.; 71 tons structural steel to Kansas City Structural Steel Co., Kansas City, Mo.; W. R. Grimshaw Co., Tulsa, general contractor.

100 tons or more, quarters and barracks, Albrook field, Canal Zone, to Southern General Fireproofing Co., Atlanta, Ga.; J. A. Jones Construction Co., Charlotte, N. C., general contractor.

100 tons, parallel route to Boston Post road, Westchester county, New York, to Concrete Steel Co., New York; Malloy Bros., Rye, N. Y., general contractors.

100 tons, inspection sheds, Bronx yards, Board of Transportation, New York, to Tidewater Structural Materials Corp., New York; John T. Brady & Co., general contractor.

100 tons, state highway bridge, Blairstown, N. J., to Concrete Steel Co., Youngstown, O., through Hill Construction Co., Mt. Holly, N. J.

100 tons, bridge, Musconetcong, N. J., to Truscon Steel Co., Youngstown, O.

100 tons, building, Yoder Co., Cleveland, to McClintic-Marshall Co., Pittsburgh.

Contracts Pending

3500 tons, five New York subways; early action expected.

2750 tons, Hoover dam, power house and appurtenant works, Boulder canyon project; partial requirements, to be furnished by United States government, bids on general contracts to be opened March 4 by bureau of reclamation, department of interior, at Denver.

1500 tons, postoffice, Boston; bids close Jan. 20.

1100 tons, reservoir, Glendale, Calif.; bids in.

1000 tons, New England telephone distributing plant, Watertown, Mass.; bids close Jan. 13.

500 tons or more, coast guard academy, New London, Conn.; Murch Bros., St. Louis, low bidders on general contract.

300 tons, theater, Twelfth and Vermont streets, Los Angeles; bids being taken.

299 tons, bridgework, East Baton Rouge Parish, La., Louisiana Highway commission.

150 tons, school, Santa Barbara, Calif.; bids closed.

138 tons, bridge, Red River Paris La., Louisiana Highway commission.

129 tons, bridgework, Avayelles Parish, La., Louisiana Highway commission.

107 tons, bridge, St. Tammany Parish, La., Louisiana Highway commission.

106 tons, roadwork, St. Landry Parish, La., Louisiana Highway commission.

Pipe

Municipal and Utility Buying Vie—Milwaukee Lets 6000 Tons—Cast Prices Easy in East

PIPE PRICES, PAGE 84

Chicago—Prospects for municipal pressure pipe buying are encouraging. Only a few utility orders have been closed for 1931, and tonnages have been lighter than expected. Milwaukee has ordered 6000 tons and Saginaw, Mich., 555 tons. Chicago delivered prices for private work are $45.20 to $46.20 for 6 to 24-inch.

Boston—Providence and Pawtucket, R. I., awarded their cast pipe, 1830 and 1400 tons, respectively, to United States Pipe & Foundry Co. Prices hold firm.

New York—Cast pipe prices are inclined to be easier. With the appearance of larger tonnages and seasonal activity on the part of utilities $35, eastern foundry, and in a few instances lower figures have appeared. Inquiries are heavier. One utility divided 6000 tons among three producers. Several thousand tons are about to be placed by another. Brooklyn Union Gas Co. divided first half requirements between two foundries. This city is preparing schedules for first half yard stocks. A Boston utility wants 1100 tons of gas pipe and fittings. Municipal buying is more active.

Pittsburgh—Tubular products demand shows little improvement. Building operations continue restricted and this is having an adverse effect upon buttweld pipe, quiet for several months. Activity in line pipe is confined mostly to discussions of prospective work. Considerable financing must still be done and franchises must be obtained before actual orders are placed. Oil country goods continue dull. A slight improvement is noted in recent demand for mechanical tubing as well as in locomotive and boiler tubes. Mill operations are up slightly to around 35 per cent.

Milwaukee—This city ordered its 6000 tons of water pipe to United States Pipe & Foundry Co. at $41, delivered. Last year the price from this same bidder was $42.50.

Birmingham, Ala.—Cast pipe production is on a better basis than early in the fourth quarter. Backlogs are fairly large. Most shops resumed after a week layoff for the holidays. Base price is unchanged. Several specifications have been received. Bids are being considered on a few other lettings.

Contracts Placed

6000 tons, various sizes, cast pipe, for Federal Water Works, New York, to United States Cast Iron Pipe Co., East Burlington, N. J., McWane Cast Iron Pipe Co., Birmingham, Ala., and R. D. Wood & Co., Florence, N. J.

6000 tons, 6 to 16-inch class C cast water pipe for Milwaukee, to United States Pipe & Foundry Co., East Burlington, N. J., at $41, delivered.

1830 tons, 4 to 20-inch cast pipe for Providence, R. I., to United States Pipe & Foundry Co., East Burlington, N. J.

1490 tons, 4 to 20-inch cast pipe for Pawtucket, R. I., to United States Pipe & Foundry Co., East Burlington, N. J.

1200 tons, 54-inch cast pipe, Yonkers-

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Chappaqua sewer section, Westchester county, New York, to United States Pipe & Foundry Co., East Burlington, N. J.

1000 tons, 4, 6 and 8-inch cast pipe for Brooklyn Union Gas Co., Brooklyn, N. Y., to United States Pipe & Foundry Co., East Burlington, N. J., and Warren Foundry & Pipe Co., Phillipsburg, N. J.

700 tons, various sizes, cast pipe for Olympia, Wash., to American Cast Iron Pipe Co., Seattle.

555 tons, 6 to 24-inch cast pipe and 20 tons of fittings for Saginaw, Mich., to United States Pipe & Foundry Co., East Burlington, N. J., at about $35, base, Birmingham.

450 tons, various sizes, cast pipe for Syracuse, N. Y., to R. D. Wood & Co., Florence, N. J.

400 tons, 4 to 12-inch class C cast pipe for Bremerton, Wash., to United States Pipe & Foundry Co., East Burlington, N. J.

350 tons, 6 to 12-inch cast pipe for New Bedford, Mass., to United States Pipe & Foundry Co., East Burlington, N. J.

225 tons, 12 to 20-inch cast pipe for New Rochelle, N. Y., to Donaldson Iron Co., Emaus, Pa.; A. W. Bryne, Hartford, Conn., general contractor.

147 tons, 6 and 8-inch class 150 cast pipe for Redwood City, Calif., to United States Pipe & Foundry Co., East Burlington, N. J.

100 tons, 6 and 8-inch centrifugal cast pipe for Sumner, Wash., to American Cast Iron Pipe Co., Seattle.

Contracts Pending

1625 tons, 30-inch class D cast pipe for Portland, Oreg.

1200 tons, 4 to 10-inch cast pipe for Oakland, Calif.; bids opened Jan. 3.

1100 tons, 4, 6 and 8-inch cast pipe and fittings, mostly 6-inch for Charles H. Tenney & Co., Boston, delivery to Massachusetts points; bids close Jan. 12.

400 tons, 16-inch and larger cast pipe and fittings, for New York, bids closed Jan. 6.

335 tons, 12 and 16-inch cast pipe for Bogalusa, La.; bids in.

325 tons, 6 and 8-inch cast pipe and fittings for Hammonton, N. J.; bids Jan. 8.

120 tons, 18-inch cast pipe for section G, Blind Brook, Westchester County Sanitary Sewer commission, N. Y.; bids Jan. 9.

143 tons, cast pipe for Inglewood, Calif.; bids closed Dec. 29.

Steel Pipe Pending

16,250 tons, large metal conduits and steel pipe, and 950 tons, small steel and metal pipe and fittings. Hoover dam, power house and appurtenant works, Boulder canyon project, Colorado river; partial requirements to be furnished by United States government; bids on general contracts to be opened March 4 by bureau of reclamation, department of interior, Denver.

5700 tons, 36 and 48-inch steel pipe for department of water supply, New York; Oakhill Contracting Co., Brooklyn, N. Y., low bidder.

2225 tons, 2, 4½ and 6⅝-inch lap weld steel pipe for Phoenix Utility Co., New York.

1785 tons, 6⅝-inch lapweld steel pipe for New York Power & Light Co., Amsterdam, N. Y.

1300 tons, steel pipe line for Chelan, Wash.; bids opened Jan. 9.

640 tons, 51-inch welded pipe line for Los Angeles; Western Pipe & Steel Co., Los Angeles, low.

Wire

Releases Aid Mills After Quiet Period—First Quarter Bookings in Good Volume

WIRE PRICES, PAGE 59

Chicago—Releases of a number of deferred shipping orders from late December have provided improved bookings for western wire mills. Numerous contracts have been signed for first quarter on the basis of $1.95 and $2.05 for wire nails, and 2.25c to 2.35c, Chicago or western mills, for plain wire. Much uncertainty exists as to March and April tonnage, but it is felt January sales to jobbers should be fair. No immediate increase in operating schedules is contemplated.

Worcester, Mass.—Wire production shows little variation from the declining months of 1930. No definite trends have yet shown. Through a diversity of products the rate of production remains at about 50 per cent of capacity. Prices are firm. Plain bright wire to dealers is quoted 2.40c, base, Worcester.

New York—Nails are moving slowly at $1.90, Pittsburgh, to jobbers, and $2 to the general trade. The 2.30c price on plain bright wire has practically disappeared, leaving 2.20c, Pittsburgh, the prevailing figure.

Pittsburgh—Wire products show improved activity. Heavier specifications and shipments compensate for the quiet of late December although orders generally are confined to small lots. Increase in automotive requirements as yet is only moderate. Producers are taking a firm stand on current prices of $1.90 to $2 for wire nails, 2.20c to 2.30c for plain wire and $35 for wire rods.

Cleveland—Sellers report some light recovery from inactivity of the holidays. Little forward tonnage is going in wire and wire products. Spring wire has eased to 3.20c from 3.30c; plain wire is 2.20c to 2.30c; nails are $1.90 and $2.00, with the inside figure representative of more going business.

Bolt, Nut, Rivet Activity Is on Better Basis

Bolts, Nuts, Rivets Prices, Page 59

Pittsburgh—Activity in bolts, nuts and rivets is improved slightly with releases received against orders held up over the holiday period. Stocks of users and jobbers are light and new buying is for prompt delivery. The market is 73 off for bolts and nuts and 2.75c, Pittsburgh, for large rivets.

Philadelphia—Bolt, nut and rivet demand is quiet. Bolts and nuts usually are 72 off list, with concessions in the form of an additional five per cent in exceptional cases. Some concessions are made in structural rivets.

Cleveland—Slight betterment is discernible in nuts and bolts, but rivets are quiet. Makers expect improvement in the automotive situation to expand with a consequent upturn reflected in their output. Except for slight informal concessions nuts and bolts continue 73 off; rivets are 2.75c, Cleveland.

Chicago—Encouraged by increased specifications in December, bolt, nut and rivet makers are looking for a fair January volume. Actual December shipments gained only slightly over November. Discounts for bolts and nuts are 63 to 74 per cent off.

Semifinished Sales Are Limited to Early Shipments

Semifinished Prices, Page 70

Pittsburgh—New business in semifinished steel is confined to small lots. Contracting so far is light. Producers generally have adopted a $30 base for rerolling billets, sheet bars and slabs. Forging billets still are quoted $36 with wire rods $35.

Philadelphia—Billet prices are unchanged at $31, Pittsburgh, for rerollers, and $36 for forging. Business is light.

Youngstown, O.—Resumption of open-hearth operations among independent valley steelworks follows the inventory period, there being about 20 open-hearth units active this week out of the valley's total of 53. Sheet bar and billet contracts for first quarter are expected to pick up as business expands. Billets, sheet bars and slabs bring $30.

Cleveland—The leading merchant producer here has increased its active open hearths from six to seven, of its 14 units. Sheet bars, billets and slabs are $30, base, Cleveland and Youngstown, O.

Chicago—Fair contracting is reported for semifinished material. base, are quoted $31 to $32, Chicago. Small billets and blooms, 4 x 4-inch Forging billets are $36 to $37.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago, furnace	$17.50
Pittsburgh, district fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Valley, furnace	17.00
Cleveland fur., local del.	17.50
Philadelphia, delivered	17.76
Virginia, furnace	17.75
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	17.50
Buffalo, del. Boston	21.41 to 21.91
Buff., all-rail, Brooklyn	20.41 to 20.91
Buff., all-rail, Newark	18.28 to 18.78
Ala., Bir. fur., local del.	14.00
Alabama, del. Chicago	17.01 to 17.51
Alabama, del. St. Louis	14.92 to 15.42
Alabama, del. Cincinnati	14.69 to 16.19
Alabama, del. Cleveland	16.51 to 17.51
Ala., Phila., dock del.	16.25
Ala., Balt., dock del.	16.00
Alabama, New York dock	16.00 to 16.50
Ala., Boston dock del.	16.25 to 16.75
Tenn., Bir. base, local del.	14.00
Tennessee, del. Cinn.	14.69 to 16.69
Montreal, delivered	23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	18.00
Buff., all-rail, Brooklyn	20.91 to 21.41
Buffalo, all-rail Newark	18.78 to 19.28
Buffalo, del. Boston	21.91 to 22.41
Virginia furnace	18.25
Eastern, del. Phila.	18.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	19.00
Eastern, del. Phila.	19.26 to 19.76

MALLEABLE

Valley furnace	17.50
Cleveland fur., local del.	17.50
Pittsburgh district fur.	18.00
Pittsburgh, delivered	18.63 to 19.13
Valley furnace	17.50
Buffalo fur., local del.	18.00
Eastern Penna., delivered	18.26 to 20.91
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Eastern Penn., del.	17.25 to 18.00
Buffalo fur., local del.	17.00
Montreal, delivered	20.50
Valley furnace	17.00

BESSEMER

Valley furnace	17.50
Pittsburgh, delivered	18.63 to 19.13
Pittsburgh, furnace	18.00

LOW PHOS.

Valley fur., standard	27.00
Philadelphia, standard	24.76 to 28.79
Copper-bear., E. Pa. fur.	22.50 to 23.00

GRAY FORGE

Valley furnace	16.50
Pittsburgh district fur.	17.00
Pittsburgh, delivered	17.63 to 18.13

CHARCOAL

Lake Superior, del. Chi.	27.04

SILVERY

Jackson County, O., fur., in per cents 6—$21; 7—$21.50; 8—$22; 9—$22.50; 10—$23; 11—$24; 12—$25; 13—$27.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents 10—$25; 11—$26; 12—$27; 13—$29; 14—$31; 15—$33; 16—$35.

Coke

Prices Per Net Tons

Beehive Ovens

Connellsville furnace	$2.50 to 2.60
Connellsville foundry	3.25 to 4.85
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	9.00 to 9.40
Chicago ovens	8.00
New England, del.	11.00
St. Louis, del.	9.00
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens, Connell. basis	5.50
Buffalo ovens	8.00 to 8.50
Detroit, ovens	8.50
Philadelphia, del.	9.00

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	10.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% manganese	11.00
North African low phosphorus	10.00
Swedish basic, 65%	9.00
Swedish low phos.	10.00
Spanish, North African basic, 50 to 60%	9.00
Newfoundland fdy., 55%	9.00
Tungsten, spot and future short ton unit, duty paid	$11.50 to 12.00
Chrome ore, 48% net ton c.i.f.	$21.50 to 22.50

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	26 to 28 cents
Indian, 48-50% (nom.)	26 to 28 cents
Brazilian, 46-48% (nom.)	25 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	$43.00
Georgia, Alabama	40.00 to 47.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	35.00 to 38.00
Georgia, Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham, Ala.	50.00 to 51.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$65.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Baltimore base, 9 x 4½ x 2½	45.00

Semifinished Steel

PRICES PER GROSS TON

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$30.00
Pittsburgh, bessemer	30.00
Youngstown	30.00
Cleveland	30.00
Philadelphia	36.30
Chicago	31.00 to 32.00
Forging, Chicago	36.00 to 37.00
Forging, Pittsburgh	36.00
Forgings, Philadelphia	41.30

SHEET BARS

Pittsburgh	30.00
Youngstown	30.00
Cleveland	30.00
Chicago	31.00

SLABS

Pittsburgh	30.00
Youngstown	30.00
Cleveland	30.00

WIRE RODS

Pittsburgh, Cleveland	35.00
Chicago	36.00

SKELP

All grades, Pittsburgh	1.60c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$85.00
*Ferromanganese, del. Pittsburgh	89.79
Spiegeleisen, 19-20%, domestic fur. spot†	30.00
Ferrosilicon, 50 per cent, freight all., c. l.	83.50
Do, less carload	88.50
Do, 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon. cts. lb., con., del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.10 to 1.15
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	160.00
Do, one-ton to c. l.	170.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50

†Carloads. Differentials apply to large quantities.

*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

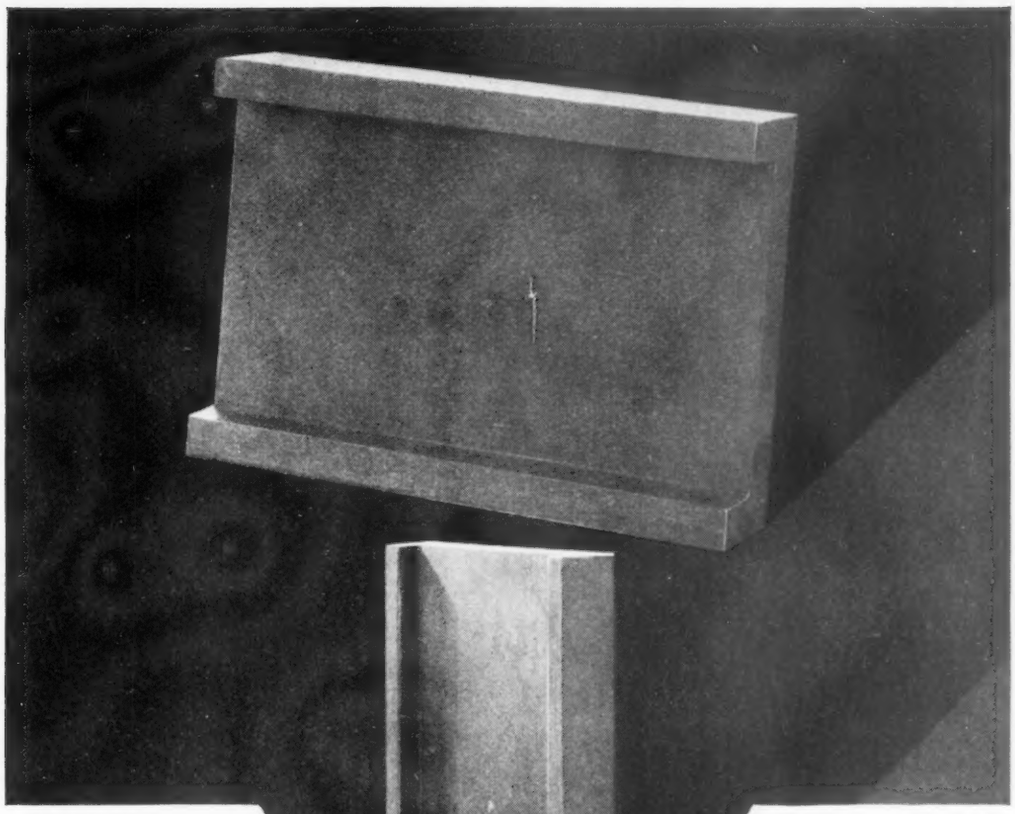
Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky and Illinois mines, per net ton	$16.00
Washed gravel, import duty paid east, tide, gross ton	19.50

LONG LIFE

ONE OF FOUR GOOD REASONS



THERE is a decided economy in using "Carbofrax," the Carborundum Brand Silicon Carbide Hearths because of their long life.

They endure long because of their greater mechanical strength and their resistance to abrasion and oxidation. They effect real savings not only in actual hearth costs but also because of less frequent shutdowns for repairs or replacement.

A saving in furnace operating hours—in labor costs—a saving represented in increased production.

Besides "Carbofrax" has such necessary qualities as high thermal conductivity and refractoriness. You couldn't ask more of a refractory hearth.

CARBOFRAX HEARTHS

REG. U. S. PAT. OFF.

Made of Carborundum Brand Silicon Carbide

TUNE IN THE CARBORUNDUM BAND

Saturday Nights at 9.00 (E. S. T.) Columbia Chain

THE CARBORUNDUM COMPANY, PERTH AMBOY, N. J.

REG. U. S. PAT. OFF.

Williams and Wilson, Ltd., Montreal–Toronto, Canada Pacific Abrasive Supply Co., Los Angeles–San Francisco–Seattle

Denver Fireclay Co., El Paso, Texas Christy Firebrick Company, St. Louis, Mo. Harrison & Company, Salt Lake City, Utah

(CARBORUNDUM AND CARBOFRAX ARE REGISTERED TRADE MARKS OF THE CARBORUNDUM COMPANY)

Pig Iron

Business Shows Customary After-Holiday Expansion—Basic More Active—Furnaces Lighted

PIG IRON PRICES, PAGE 70

Pittsburgh—The pig iron market has become more active since Jan. 1. Some orders held up in December have been released, but the tonnage is light. New business and shipments still are restricted, buying being in small lots for prompt shipment with little forward tonnage placed. Consumers are not interested in contracts. Inquiry generally is lacking and prices are largely nominal. Merchant furnace operations in this district are restricted to one stack.

Boston—Less than 2000 tons of pig iron was sold in the New England district during the past week. Mystic Iron Works, Everett, Mass., booked 1500 tons. No inquiries are pending.

New York—Pig iron business continues light, the week's sales aggregating 4000 tons. Included is 1000 tons for the Thatcher Furnace Co. plants at Newark and Garwood, N. J. The Worthington Pump & Machinery Corp., Harrison, N. J., reduced its requirements and is now virtually out of the market. Instead of 1700 tons, the company bought 600 tons for Buffalo. Inquiry includes 450 tons for the Schenectady, N. Y., plant of the American Locomotive Co. Buffalo iron is unchanged at $15 to $16, furnace, and southern iron is $16 to $16.50, delivered New York docks.

Philadelphia—Large sales of basic iron feature the market. Basic is $17.25 to $18, delivered, with $17.50 the average. Foundry iron sales are moderate, at $17, base, eastern Pennsylvania furnace. Delaware river pipemakers recently bought large additional tonnages of Alabama and Massachusetts iron, delivered prices being below those of eastern Pennsylvania iron. Eastern Pennsylvania copper free, low phosphorus continues $24, base, furnace, and English iron of the same grade is $23.50, duty paid, tidewater.

Buffalo—Buffalo producers have sold a fair amount of iron in their own district this week. In the East, low southern quotations continue to hamper business. Consumers' and producers' stocks are much lower than the average of 1930.

Youngstown, O.—Aided by the sheet, strip and pipe trades, the local steelworks are relighting some stacks. The Republic Steel Corp.'s resumption at one Haselton stack last week is to be followed by the torch's application next Monday to the relined Trumbull-Cliffs furnace at Warren. Merchant stacks are not planning to blow in, as trade is dull. No. 2 foundry and basic are $17, valley, and malleable and bessemer are $17.50.

Cleveland—Shipments of pig iron are picking up, freed from holiday influences, and the movement this month will be larger than that in December, as indicated by instructions to furnaces. Whether this represents an improvement in the melt or the desire of consumers to build up a safe margin of stocks after taking inventory is not clear. Some users are preparing for a larger volume of business in the first quarter than in the last three months of 1930. New sales are restricted to small lots for early shipment; the total booked by furnace interests with headquarters in Cleveland amounting to approximately 8500 tons. Inquiries are light. Cleveland makers hold to $17.50, base, furnace, for local delivery and $16 minimum for outside shipment.

The Corrigan, McKinney Steel Co. is lighting another blast furnace this week, mainly for steel requirements. Its furnace operations were limited to two stacks of its four during the greater part of 1930.

Cincinnati — Furnace interests booked nearly 3500 tons during the past week. Contracting for first quarter is restricted, while melters' needs remain undetermined. Prices exhibit weakness.

Chicago—Merchant furnaces are entering the year with good order books and little indication of speculative commitments from buyers. Furnaces are oversold for first quarter tonnage under contract based on normal production. Another merchant stack may go in soon, at $17.50 for the base grades. Southern iron is stronger at a minimum of $11, Alabama furnace. More small sales of northern iron are noted. Shipping releases are increasing slowly.

St. Louis—The pig iron market continues quiet. Foundries report specifications are disappointing; warm weather is affecting demand for stoves and heating apparatus. Buyers indicate they will order only as requirements arise. Prices are steady.

Birmingham, Ala.—Sales still are limited to small lots. Though furnaces quote $14, base, for local delivery reports of weakness are current. Lower prices continue to be done in outside competitive territories. Woodward Iron Co. has its new machine casting equipment in service. Production of basic iron is being increased.

Toronto, Ont.—Melters have been practically out of the market for the past three weeks but local blast furnace representatives look for more active buying soon. Prices are unchanged.

Ferroalloy Shipments Reflect New Year Pickup

Ferroalloy Prices, Page 70

New York — Ferromanganese is moving slightly better at $85, duty paid, for carload lots. Domestic spiegeleisen, 19 to 21 per cent, is $30, furnace. Improved specifications for steel are reflected in a gain in special ferroalloys. Shipments of silicon, chrome, and vanadium are increasing this month over those of December. Many contracts for 1931 have been signed, and others are expected to be signed this week. Tungsten continues in a dull market, with exact prices difficult to establish. Wolframite ore is about $3.50 to $4 a short ton unit in bond, plus duty of $7.93, and ferro $1.10 to $1.15 a pound contained.

Pittsburgh—Shipments of ferromanganese and spiegeleisen are slow to increase over the quiet rate of late December. Most buyers have contracted for first half year, although a few remain to place their requirements. The market on ferromanganese continues $89.79, delivered, for carload lots with spiegeleisen $30 in lots up to 100 tons. Other ferroalloys generally continue quiet with prices unchanged.

Russian Tractor Order Keeps Case Plants Active

J. I. Case Co., Racine, Wis., manufacturer of tractors and farm implements, is working on a $5,400,000 order for tractors and plows for the Russian soviet government. A part of this order will be shipped from stock.

Four thousand tractors are to be shipped from the Racine plant by Feb. 1, and several hundred plows will be exported from the Case plants at Rockford and Dixon, Ill.

All these plants are operating on a part time basis. The tractor works has been working on the Russian order since September. The company in the last year exported 1300 tractors to Russia.

Scrap

Better Buying Appears and Slight Adjustments Are Made in Prices—Tonnages Covered

Chicago—Recent adjustments of consumer prices show mild advances in several grades of steel and iron scrap, including railroad malleable, miscellaneous rail scrap, railroad leaf springs and a few other grades. The report that steelworks operations are approaching a 50 per cent basis has stirred a moderate feeling of strength, as it is held that operating rates on that schedule should make a more flexible scrap market. While the market has not taken a stronger turn, some of the shaky feeling of the last ten days has disappeared. A further sale of heavy melting steel has been made at $10.50, while material is being purchased by dealers at $10 to $10.25.

Boston—Scrap business remains

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.

HEAVY MELTING STEEL

Birmingham	9.50 to 11.00
Boston, dealers	6.50 to 7.00
Buffalo, No. 1	10.75 to 11.25
Buffalo, No. 2	9.25 to 9.75
Chicago	10.00 to 10.50
Cinci., deal.	9.50 to 10.00
Cleve., No. 1	10.25 to 10.75
Cleve., No. 2	9.75 to 10.25
Det., No. 1 deal.	9.50 to 10.00
Det., No. 2 deal.	7.00 to 7.50
E. Pa. del. mill	10.00 to 11.00
N. Y. del. R. R.	7.00
N. Y. deal. No. 2	5.50
N. Y., deal. yd.	5.50
Pitts., No. 1	13.00 to 13.50
St. L. No. 1 sel.	10.50 to 11.00
Federal, Ill.	9.75 to 10.25
Granite C., Ill.	9.00 to 9.50
Valleys, No. 1	12.50 to 13.00

COMPRESSED SHEETS

Buffalo, dealers	9.25 to 9.75
Chicago	8.50 to 9.00
Cleveland	9.00 to 9.50
Detroit, dealers	8.75 to 9.25
E. Pa. new mat.	9.00 to 10.00
Pittsburgh	12.25 to 12.75
Valleys	12.00 to 12.50

BUNDLED SHEETS

Buffalo	7.00 to 7.50
Cinci., deal.	8.75 to 9.25
Cleveland	7.00 to 7.50
Eastern Pa.	9.00
Pittsburgh	10.00 to 10.50
St. Louis	5.50 to 6.00

SHEET CLIPPINGS LOOSE

Chicago	5.50 to 6.00
Cincinnati	5.00 to 5.50
Detroit, dealers	6.00 to 6.50
St. Louis	5.50 to 6.00

STEEL RAILS SHORT

Birmingham	12.00 to 12.50
Boston, dealers	5.50 to 7.00
Buffalo	13.75 to 14.25
Chicago (3 ft.)	12.00 to 12.50
Chicago (2 ft.)	12.50 to 13.00
Cinci., deal.	15.50 to 16.00
Detroit, deal.	12.50 to 13.00
Pitts. (open-hearth, 3 ft. and less)	14.50 to 15.00
St. Louis	13.50 to 14.00

STOVE PLATE

Birmingham	8.00 to 9.00
Boston, con.	8.00 to 8.50
Buffalo	9.00 to 9.25
Chicago, net	7.00 to 7.50
Cinci., deal. net	5.25 to 5.75
Det., net, deal.	6.25 to 6.75
Eastern Pa.	9.00
N. Y., deal. mill	4.75
St. Louis	8.00 to 8.50

COUPLERS, SPRING

Buffalo	13.50 to 14.00
Chicago	12.00 to 12.50
Eastern Pa.	16.00 to 16.50
Pittsburgh	16.00 to 16.50
St. Louis	11.00 to 11.50

ANGLE BARS—STEEL

Chicago	12.00 to 12.50
St. Louis	9.50 to 10.00

LOW PHOSPHORUS

Buff., billets and bloom crops	15.00 to 15.50
Cleveland bil. and bloom crops	16.50 to 17.00
Eastern Pa.	17.00
Pittsburgh billet bloom crops	17.50 to 18.50
Pitts. sheet bar crops	16.50 to 17.00

FROGS, SWITCHES

Chicago	10.75 to 11.25
St. Louis	11.00 to 11.50

SHOVELING STEEL

Chicago	10.00 to 10.50
Cleveland	6.75 to 7.25
St. Louis	9.50 to 10.00

RAILROAD WROUGHT

Birmingham	9.50 to 10.00
Boston, dealers	8.00 to 8.50
Buffalo, No. 1	8.50 to 9.00
Buffalo, No. 2	11.00 to 11.50
Chicago, No. 1	9.50 to 10.05
Chicago, No. 2	10.00 to 10.50
Cinci., No. 2	9.50 to 10.00
Eastern Pa.	13.50
N. Y., No. 1 deal.	10.00 to 10.50
Pitts., No. 2	13.00 to 13.50
St. Louis, No. 1	7.75 to 8.25
St. Louis, No. 2	9.50 to 10.00

SPECIFICATION PIPE

Boston	6.50 to 7.00
Eastern Pa.	11.50 to 12.00
N. Y., deal.	7.25 to 7.50

BUSHELING

Buffalo, No. 1	9.25 to 9.75
Chicago, No. 1	8.50 to 9.00
Cinn., No. 1 dl.	8.00 to 8.50
Cinn., No. 2	4.50 to 5.00
Cleve., No. 2	6.00 to 6.50
Det., No. 1 new deal.	8.25 to 8.75
St. L., No. 1	7.00 to 7.50
Val. new No. 1	11.50 to 12.00

MACHINE TURNINGS

Birmingham	7.00 to 8.00
Boston, dealers	2.00 to 2.50
Buffalo	6.00 to 6.50
Chicago	4.25 to 4.75
Cinn., deal.	4.50 to 5.00
Cleveland	4.75 to 5.25
Detroit	3.75 to 4.25
Eastern Pa.	6.50 to 7.50
N. Y., deal.	3.00
Pittsburgh	6.00 to 6.50
St. Louis	4.00 to 4.50
Valleys	6.00 to 6.50

BORINGS AND TURNINGS For Blast Furnace Use

Boston	2.00 to 2.10
Buffalo	7.00 to 7.50
Cinn., deal.	4.50 to 5.00
Cleveland	6.75 to 7.25
Detroit, deal.	5.00 to 5.50
Eastern Pa.	6.00 to 7.50
N. Y., deal.	3.00
Pittsburgh	7.75 to 8.25

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	7.00 to 8.00
Boston, chem.	9.00 to 9.50
Boston, deal.	2.00 to 2.50
Buffalo	7.00 to 7.50
Chicago	5.50 to 6.00
Cinn., deal.	4.50 to 5.00
Cleveland	6.75 to 7.25
Detroit, deal.	5.00 to 5.50
Eastern Pa.	7.00 to 7.50
E. Pa., chem.	14.50
N. Y., deal.	3.50
Pittsburgh	7.75 to 8.25
St. Louis	6.00 to 6.50

PIPE AND FLUES

Cinn., deal.	7.50 to 8.00

RAILROAD GRATE BARS

Buffalo	7.00 to 7.50
Chicago, net	7.00 to 7.50
Cincinnati	7.00 to 7.50
Eastern Pa.	9.00 to 9.50
N. Y., deal.	6.00
St. Louis	7.50 to 8.00

FORGE FLASHINGS

Boston, deal.	6.00 to 6.25
Buffalo	9.25 to 9.75
Cleve. ov. 10 in.	9.00 to 9.50
Detroit	8.00 to 8.50

FORGE SCRAP

Boston, del.	5.50 to 6.00
Chicago	13.50 to 14.00
Eastern Pa.	11.00

ARCH BARS, TRANSOMS

Chicago, net	11.50 to 12.00
St. Louis	11.50 to 12.00

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	10.50 to 11.00
Chi., steelworks	6.50 to 7.00
Cleveland	9.50 to 10.00
Eastern Pa.	11.00
Pittsburgh	10.50 to 11.00
St. Louis	7.50 to 8.00

STEEL CAR AXLES

Birmingham	14.00 to 14.50
Boston, ship. pt.	14.00 to 15.00
Buffalo	15.50 to 16.00
Chicago	15.10 to 15.70
Eastern Pa.	20.50
St. Louis	14.50 to 15.00

SHAFTING

Bos., ship. pt.	13.00 to 13.50
Chicago	12.90 to 13.45
N. Y., deal.	13.00 to 14.00
St. Louis	12.00 to 12.50
E. Penna.	18.00

CAR WHEELS

Birming., iron	10.00 to 11.00
Boston, iron	14.00 to 14.50
Buffalo, iron	13.00 to 13.50
Buffalo, steel	13.50 to 14.00
Chicago, iron	11.50 to 12.00
Chi., roll steel	13.50 to 14.00
Cincinnati, iron	10.50 to 11.00
E. Pa. steel	15.50 to 16.00
E. Pa. iron	13.50 to 14.00
Pitts., iron	14.00 to 14.50
Pitts., steel	16.00 to 16.50
St. Louis iron	10.50 to 11.00
St. Louis, steel	13.25 to 13.75

NO. 1 CAST SCRAP

Birming., cup.	9.50 to 10.50
Buffalo (mach.)	10.00 to 10.75
Boston, textile	11.50 to 12.50
Chicago, mach.	10.65 to 11.20
Chi., railroad	10.10 to 10.65
Chicago, agri.	9.50 to 10.10
Cinn., mach. cup., gross	13.50 to 14.50
Cleve. cupola	12.00 to 12.50
Det., net deal.	8.50 to 9.00
E. Pa. cupola	12.50 to 13.00
N. Y. cup. deal.	8.00 to 8.50
N. Y., del. local foundries	14.00
Pitts., cupola	12.50 to 13.00
San Fran., del.	13.50 to 14.00
Seattle	14.00 to 14.25
St. L. No. 1 ma.	9.75 to 10.25
St. L. No. 1	9.00 to 9.50

HEAVY CAST

Boston	10.50 to 11.00
Bos. mach. cast	11.50 to 12.50
Buffalo, break	7.00 to 7.50
Cleve., break	6.50 to 7.00
Detroit, auto, net deal.	10.50 to 11.00
Det., break., dl.	6.50 to 7.00
Eastern Pa.	11.00
N. Y. No. 1 dl.	8.00 to 8.50
N. Y. break. dl.	7.00 to 8.00
Pittsburgh	9.00 to 9.50

MALLEABLE

Boston R. R.	13.00 to 13.50
Buffalo	13.00 to 13.50
Chicago, agri.	11.00 to 11.50
Chicago, R. R.	12.75 to 13.25
Cinn., R. R. dl.	12.00 to 12.50
Cinn., agri., dl.	12.00 to 12.50
Cleve., rail	12.50 to 13.00
Det. auto deal.	11.00 to 11.50
St. Louis, rail	10.50 to 11.00

RAILS FOR ROLLING 5 feet and over

Birmingham	11.25 to 11.50
Boston	8.50 to 9.00
Buffalo	10.00 to 10.50
Chicago	13.00 to 13.50
Eastern Pa.	13.00 to 13.50
New York	9.50 to 10.00
St. Louis	11.25 to 11.75

LOCOMOTIVE TIRES

Chicago, cut	13.00 to 13.50
St. L. No. 1	11.00 to 11.50

LOW PHOS. PUNCHINGS

Chicago	12.00 to 12.50
Buffalo	14.00 to 14.50
Eastern Pa.	15.50 to 16.50
Pittsburgh	15.50 to 16.50

FARREL-SYKES GEARS

STEEL MILL EQUIPMENT

GEARS UP TO 200″ DIA. 27″ FACE, 12 D. P. TO 1 D. P.
AND
UP TO 120″ DIA. 54″ FACE

MILL PINIONS UP TO 27″ FACE 1 D. P.
IN CAST STEEL, FORGED STEEL OR ALLOY STEEL
NORMALISED OR HARDENED AND TEMPERED

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quiet. Prices remain at their low levels. Demand is expected for old rails, wanted for rerolling into bars for concrete work in road building.

New York—Following the purchase of 7000 or 8000 tons by the Lukens Steel Co., Coatesville, Pa., at $11, delivered, local dealers have reduced buying price on No. 1 railroad steel 50 cents a ton to $7, New York. Foundry stove plate, on the other hand, is higher, following the purchase of 600 to 700 tons by the American Radiator & Sanitary Co., Bayonne, N. J., at $8.50 delivered. As a result, dealers are now paying $6, New York, on shipments for this point, with the market ranging down to $5.25, New York. Other mills are showing more interest, although in at least one important instance at lower prices than previously paid.

Philadelphia—Bethlehem Steel Co. has purchased 3000 tons of prepared steel scrap for shipment from New York at $10, delivered Bethlehem, for No. 1 heavy melting steel and $8.50 for No. 2 melting steel. The dealer may ship both grades on this contract, but is expected to ship about half and half.

Lukens Steel Co. has bought 5000 tons of strictly No. 1 heavy melting steel at $11 and the market now is $10 to $11, delivered, this district.

Buffalo—Two large consumers have lifted embargoes on No. 2 heavy melting steel and are receiving some shipments. Bethlehem still holds back deliveries, however. Sales of No. 1 machinery cast at $10.75 and ordinary cast at $10 are reported. Short steel rails sold at $14, it is said.

Pittsburgh—Steel and iron scrap is stronger and more active. Two mills have bought heavy melting steel at $13.50, compared with previous sales at $13. Dealers are offering higher prices than recently in covering. Several mills are out of the market but new buying is looked for shortly. Blast furnace material is stronger on dealer coverage.

Cleveland—Activity in iron and steel scrap is confined to slight dealer trading. Local mills continue to hold up shipments and refuse to book additional tonnage. Prices are nominal and unchanged with No. 1 melting steel quoted $10.25 to $10.75 and compressed sheets $9 to $9.50. Tonnage for immediate delivery could be booked under these figures. Little scrap is moving to the valleys. Prices there are unchanged from December, melting steel holding at $12.50 to $13.

Detroit—The market is quiet and prices are largely unchanged. Dealers do not look for much change over the next few months. Cast iron borings, short shoveling turnings, and short turnings and borings mixed have displayed a slight upward turn.

Cincinnati—The iron and steel scrap market here has failed so far to recover from holiday dullness. Shipments to mills continue at the restricted rate experienced in December. Quotations are unchanged.

St. Louis—A generally better feeling and somewhat more activity have developed in iron and steel scrap. Consumers are negotiating for supplies, and fair tonnages of steel and blast furnace material have been actually bought. An east side mill acquired approximately 4000 tons of heavy melting steel and steel specialties, and a local steel interest is inquiring for first quarter supplies, which normally run close to 25,000 tons. Other inquiry, actual and tentative, totals around 10,000 tons. A tonnage of blast furnace material, borings, turnings and busheling, reported at 8000 to 10,000 tons, was reported closed by a furnace interest for delivery during the next three months.

Birmingham, Ala.—Steel and iron scrap is inactive the tonnage moving being inconsequential. Heavy melting steel still is weak with $11 the maximum. Larger consumers have a fair tonnage on hand.

Toronto, Ont.—The Canadian iron and steel scrap markets are still quiet. Consumers have been buying sparingly and there is no indication of early improvement. Iron grades have shown some improvement, both in connection with spot and future delivery orders. Most demand is for spot delivery principally for machinery cast. Prices continue unchanged.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Coke

Beehive Foundry Fuel Down 25 Cents—Furnace Grade Dull —Heating Demand Is Steady

COKE PRICES, PAGE 70

Pittsburgh—Beehive coke shipments are moderately heavier since the holidays. The spot market for furnace coke is dull, with sellers usually quoting $2.50. Shipments of heating coke are steady but light. Foundry coke is moving slightly better than a year ago. Some foundry fuel is available at $3.25 compared with $3.50 quoted recently. Prices of premium brands are steady.

Beehive coke production in the Connellsville district during the week ending Dec. 27 was 13,300 tons against 13,600 tons the preceding week, and 33,240 tons the corresponding week of last year, according to the *Connellsville Courier*.

New York—Coke has not recovered from the holiday dullness. Prices are soft at $2.50 to $2.65, Connellsville, for beehive furnace coke and $3.50 to $3.75 for standard beehive foundry coke. Premium brands of beehive foundry are $4.75 to $4.85, Latrobe, Pa. By-product coke is $9 to $9.40, Newark, N. J.; $11, New England; and $9, Philadelphia.

Cincinnati—Specifications for by-product foundry coke show slight improvement after abnormal curtailment. Quotations remain unchanged at $9, delivered Cincinnati.

St. Louis—New coke orders are lacking. By-product interests report stocks of foundry and furnace grades are no larger than normal for this season, production having been held down. Prices are steady.

Birmingham, Ala.—Coke production is being increased slightly as demand improves. Sales of domestic grades are good.

Chicago—More than 90 per cent of the by-product foundry coke contracts for the year in this district have been signed at $8, ovens.

Production of range boilers in November was 36,186 as reported by the bureau of the census by 13 manufacturers. This compares with 47,718 in October.

Pacific Coast

Fair Activity Prevails, with Much Buying in Prospect—1930 Bookings in Pipe Near Total for 1929—British Coke and Utah Pig Iron Reduced—Other Prices Are Unchanged

Seattle—The new year finds the Pacific Northwest in a hopeful frame of mind, in view of the number of important steel projects immediately pending or in prospect. Next month Seattle will open bids for furnishing $100,000 worth of electric apparatus for the municipal Lake Union steam plant and a substation, to include two complete units of automatic switching equipment and transformers.

Pig Iron and Coke

Foundry activity is at a low ebb at this season, although a few shops are busy on specialized contracts. Not much improvement is anticipated until spring work begins in late February. Stocks of raw material are of fair volume and buying for first quarter has been restricted. Prices are down for the next quarter. Tyneside coke has been reduced from $14 to $13.50. Buying is in small lots as deliveries from England can be made in four or five weeks. British coke is being generally used in this territory. For the first half of 1931, Columbia iron has been reduced $1, No. 1 being quoted at $23.50 in tonnages of two cars or $24.50 in smaller lots. Some contracts have been closed on this basis, more in anticipation than on actual business in hand.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

Bars, Plates and Shapes

Both local steel mills have larger unfilled tonnages than a year ago. Business of 1930 on the whole is not far behind totals for 1929. This week no tonnages of more than 100 tons were closed. Several important projects involving reinforcing are to be up shortly. Concrete bar prices are unchanged at 2.30c. Mercer Steel Co. has contracted to furnish the Portland commission of public docks 17,500 lineal feet of reinforcing.

Several shapes jobs are pending, the most important being 3300 tons for the Seattle Ford plant. Other tonnages include 100 tons for a state bridge in Whatcom county, 315 tons for a bridge in Pierce county, 210 tons for a warehouse at the navy yard and 450 tons of plates and shapes for a steel barge to be built here. Bids were opened at Portland today for reconstruction of the Hawthorne bridge, Portland, for which 155,000 is available.

Pipe Inquiry Is Active

Active inquiry for cast iron pipe continues and several important jobs are up for figures. Awards this week totaled 1200 tons as follows: To American Cast Iron Pipe Co.: 700 tons for Olympia, Wash., 100 tons for Sumner, Wash.; to United States Pipe & Foundry Co., 400 tons for Bremerton, Wash. Seattle has opened bids for a large project on Beacon hill but city officials are in controversy over the kind of pipe to be purchased.

California Buying Well

San Francisco—(*By Air Mail*)—Despite the fact that general demand for steel products on the Pacific Coast is light, a fair tonnage of structural shapes and reinforcing bars were placed. Included among the larger bookings were 1600 tons of 30-inch cast iron pipe for the Ross Island pipeline, Portland, Oreg., secured by the United States Pipe & Foundry Co., and 1750 tons of shapes for an auditorium in Pasadena, placed with the Consolidated Steel Corp.

Awards of concrete bars aggregated 6848 tons and brought the total for 1930 to 76,286 tons as compared with 83,665 tons for 1929. Unstated interests took 500 tons for an auditorium in Pasadena. Soule Steel Co. secured 250 tons for a mausoleum in Compton, Calif. New inquiries include 100 tons for a reservoir in Glendale, Calif., 300 tons for a theater in Los Angeles and 150 tons for a school in Santa Barbara, Calif. Prices remain unchanged on out-of-stock material in the Los Angeles and San Francisco districts, 2.50c, base, on carload lots, being firm.

Moore Drydock Co. took 125 tons of steel plates for a lighthouse tender for the government, in San Francisco. Western Pipe & Steel Co. was low bidder on 640 tons of 51-inch welded steel pipe for Los Angeles.

Structural shape awards aggregated 7210 tons and brought the total for 1930 to 116,720 tons, compared with 188,401 tons and 142,451 tons, respectively, for 1929 and 1928. Among the more important lettings were 350 tons for a gantry crane and runway for the Mare Island navy yard, secured by the Judson-Pacific Co., and 325 tons for a shop building at the naval base, San Diego, Calif., taken by McClintic-Marshall Co. Western Pacific Co. has awarded 300 tons for plate girders to the Columbia Steel Co. and will open bids Jan. 16 for 600 tons for two bridges. Plain material remains unchanged at 2.15c to 2.25, c.i.f.

Other Finished Material

Despite the fact that the movement of all other steel commodities on the Pacific Coast fell considerably below the totals for 1929, cast iron pipe demand held its own. Awards during the past year totaled 81,077 tons, compared with 82,161 tons for 1929 and 77,500 tons for 1928. United States Pipe & Foundry Co. took 147 tons for Redwood City, Calif. American Cast Iron Pipe Co. is low bidder on 152 tons for Hawthorne, Calif. Bids have been opened on 143 tons for Inglewood, Calif., and bids will be opened Jan. 5 for 1217 tons for Oakland.

December Ingot Output in Further Decline

New York,—Calculated monthly production of steel ingots during December totaled 2,007,774 gross tons, according to the American Iron and Steel institute. This was a decline compared with calculated output of 2,234,482 tons in November and 2,903,012 tons in December, 1929.

December production brought total calculated output for 1930 to 39,652,539 gross tons, which compares with 54,312,279 tons in 1929.

Daily rate of output during the month was 77,222 tons with 26 working days during the month. Per cent of operation for the month was 38.57 per cent, based on the annual capacity as of Dec. 31, 1929, of 62,265,670 gross tons for bessemer and open hearth steel ingots.

During the year there were 311 working days and daily average production was 127,500 tons. Per cent of operation for the industry last year was 63.68 per cent of capacity. In 1929 the industry operated at 89.05 per cent of capacity.

Entente Loses All but Hold on European Steel Quotas

(*Concluded from Page* 19)

export business the scale of fines was reduced.

This method now is confirmed and applied also to France, so that in the case of France and Germany, each is allowed to divide its production into two figures, one applying to domestic trade and one to export trade.

The figure applying to export trade is to be calculated on the average exports which the French and German works realized during September and October, 1930, which would average about 285,000 metric tons for France and 356,000 tons for Germany. The penalty on the excess of output applying to the domestic trade figure will be $4 per ton, but the penalty for any excess applying to export business will be reduced to $1 per ton. The full penalty of $4 will be applied in all cases to Belgium, Luxemburg and the Saar.

It is to be understood that these rulings are only provisional, but that they will serve as a basis in the preparation of the new statutes. Sentiment with regard to extension of the life of the entente for a period of years now is much more hopeful than it was two or three months ago, and it is hoped that, once established on a new footing, it will prove even more useful than it has in the past.

Personals

(*Concluded from Page* 25)

scription to give this formal recognition to Mr. Crawford of his long service.

□ □ □

George C. Cluff, New York manager of sales for Carnegie Steel Co., Pittsburgh, sails Jan. 8 for the West Indies.

□ □ □

Frank Fry, formerly affiliated with Hausman & Wimmer Co., New York, is now with Schiavone-Bonomo Corp., iron and steel scrap, New York.

□ □ □

F. W. Deppe, formerly district sales representative at St. Louis for Reading Iron Co., Reading Pa., has been appointed general manager of sales to succeed H. F. Mattern, resigned.

□ □ □

Carl V. Dodge, who since 1921 has been assistant manager of combined roll and steel castings sales for United Engineering & Foundry Co., Pittsburgh, has been named manager to succeed the late William Gardner.

□ □ □

L. F. Rains, formerly vice president of Columbia Steel Corp., at Salt Lake City, Utah, now a subsidiary of the United States Steel Corp., New York, has been elected president of the A. M. Byers Co., Pittsburgh, with new pipe and wrought iron mills at Ambridge, Pa. He succeeds the late A. H. Beale and will be located in Pittsburgh, after Feb. 1.

□ □ □

Rudolph Klatt, secretary of Western Malleables Inc., Beaver Dam, Wis., since its reorganization three years ago, has resigned to devote his entire time to the Beaver Chemical Works and the Beaver Silo & Box Mfg. Co., both of Beaver Dam, in which he holds substantial interests. His successor has not yet been named.

□ □ □

Harry W. King for many years assistant to C. L. Taylor when he was vice president of Morgan Engineering Co., Worcester, Mass., and who has been head of that company's engineering department, Jan. 5 became assistant vice president of Aetna-Standard Engineering Co., Youngstown, O. Mr. Taylor now is vice president of the Aetna-Standard.

□ □ □

Herbert A. May, formerly vice president, Union Drawn Steel Co., Beaver Falls, Pa., has been elected assistant to F. A. Merrick, president Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Mr. May was elected vice president of Standard Gauge Steel Co., Beaver Falls, in 1923. He later was made assistant treasurer of Union Drawn, being promoted to the vice presidency in December, 1928.

□ □ □

Frank M. Ryan is being transferred from Worcester, Mass., plant of the Norton Co., to Welwyn, Garden City, England, to be works manager. He will sail this month to open the plant in February or March. Others whom he is taking with him to constitute the organization there include:

Evald Ljungberg to supervise the mixing and glass wheel departments, assisted by James Holland from the Germany. plant.

Frank Swenson to supervise the shaving puddled moulding and N process operations.

Eric Alson to supervise truing, bushing, balancing and testing, assisted by John Matson, specializing on truing; Gustav Hiding and John C. Smith, kiln and fire brick department; Rolf Johnson, grading and inspection, and Gustaf Ekeroth, packing, shipping and stock.

August M. Langhill foreman of the bakelite department, will supervise all organic wheel departments; Oscar Wahlgren will have charge of pressed wheels; William Cleveland will supervise the silicate department; and Carl E. E. Carlson will have charge of maintenance.

L. S. Washburn, Elmer L. Taylor and Oscar Wallberg, of Compagnie des Meules Norton, will be assistant general foremen.

1930 Pig Iron Production Proves Disappointing

(*Concluded from Page* 23)

Of the 11 furnaces blown out in December, five were merchant and six were nonmerchant or steelworks. No merchant furnaces were blown in, while of the steelworks class two were blown in and eight blown out.

Furnaces blown in were: In Alabama: Ensley No. 4, Tennessee Coal, Iron & Railroad Co. In Kentucky: Ashland No. 1, American Rolling Mill Co.

Among furnaces blown out were: In Ohio: Youngstown A and D and Hubbard No. 2, Youngstown Sheet & Tube Co. In Pennsylvania: One Aliquippa, Jones & Laughlin Steel Corp.; Shenango No. 3, Shenango Furnace Co. In New York: Harriet Y. Wickwire Spencer Steel Corp. In Virginia: Pulaski, Pulaski Iron Co. In Alabama: One North Birmingham, Sloss-Sheffield Steel & Iron Co.; Ensley No. 1, Tennessee Coal, Iron and Railroad Co.; one Pioneer, Republic Steel Corp. In Colorado: One Minnequa, Colorado Fuel & Iron Co. In Illinois: South Works E, Illinois Steel Co. In Indiana: Gary No. 2, Illinois Steel Co.

Structural Shapes

(*Concluded from Page* 63)

Stamford, Conn.; general contract to Irwin & Leighton, Philadelphia.

338 tons, bridge, St. Tammany Parish, La., Louisiana Highway commission.

330 tons, Dannemora, N. Y., prison addition; bids in.

300 tons, bridges, Erie railroad, Forest City, Pa.

300 to 500 tons of construction material, rolling steel doors and other steel material for 30 to 50 standard United States army hangars, Wright Field, Dayton, O.; bids being taken by army air corps.

300 tons, addition to South high school, Cleveland; bids Jan. 17.

250 tons, buildings, Libby Glass Co., Toledo, O., general contract to H. K. Ferguson Co., Cleveland.

200 tons, addition, research laboratory building, department of health, Otisville, N. Y.

150 tons, junior high school, Bellefontaine, O.

289 tons, bridge, West Carroll Parish, La., Louisiana Highway commission.

233 tons, roadwork, La Salle Parish, La., Louisiana Highway commission.

213 tons, bridge, East Baton Rouge Parish, La., Louisiana Highway commission.

160 tons, steel log barge; general contract to Marine Construction Co., Seattle.

140 tons, plant building, Merrimac Chemical Co., Everett, Mass.

130 tons, Feilbach school, Toledo, O.; general contract to Kopitke Construction Co.

130 tons, state highway bridge, Bear Hills, Md.; Phoenix Bridge Co., Phoenixville, Pa., low bidder.

125 tons, bridge, Stone Harbor, N. J.; subcontractor Kolyn Construction Co., Trenton, N. J.

120 tons, Madison theater, Mansfield, O.; bids Jan. 12.

Europe

Railroad and Bridge Work Feature British Market—German Prices Coming Down

London—(*By Cable*)—European steel markets continue quiet. In England the Great Western railroad has announced a program for relaying 400 miles of track and reconstructing bridges and docks. Nearly £2,000,000 ($9,720,000) will be spent for rolling stock. Dorman, Long & Co. have booked a £616,000 ($2,993,760) contract for constructing a bridge at Middlesbrough. Many steelworks in England and Scotland continued their holiday suspension until Jan. 5.

The influence of the holiday lull also is apparent on the Continent. Belgian steelmakers expect further orders for rails next week. French interests report efforts at price stabilization are proving successful. An impending reduction in domestic iron and steel prices is the center of interest in Germany. Export trade continues stagnant and offers little sign of betterment.

British Pig Iron Makers Plan Rebate to Exclusive Users of Home Product

BIRMINGHAM, Eng.—Midland pig iron producers have formulated a scheme for granting a rebate to purchasers who agree to buy British iron only. It applies to large buyers only and excludes merchants. Traders who take from 1000 to 1500 tons of pig iron in six months will be entitled to a rebate of 6d a ton and the scale rises to 9d for 1500 to 3000 tons, and to 1s for over 3000 tons. It is designed primarily to stop the foreign invasion but it also gives preference to the large buyer, who claims that he should be treated better than the foundryman who buys in 10-ton lots.

Specifications for heavy steel are as difficult as ever to obtain. Little material is wanted for shipbuilding and structural engineers are in no better position. A few contracts are being given out but competition for these leads to price cutting on a big scale. Rolling stock works are moderately employed and have been able to supplement their order books recently with overseas requirements.

The Kenya & Uganda railroad has just placed an order for 58 covered freight cars with the Metropolitan Cammell Carriage Wagon & Finance Co. Ltd. According to a message from Johannesburg several contracts have been approved by the South African board of contracts in connection with establishment of iron and steel plants in South Africa. Several firms in the north of England will benefit by these orders.

In the Middlesbrough district Continental competition prevails and 1466 tons of pig iron from the Continent were unloaded in the Tees in addition to 956 tons of steel bars. The present output of Middlesbrough furnaces is being taken up by home requirements but there is a movement on the part of the consumers to bring down prices in view of the fact that some makers have already shaded quotations to compete with Belgium. Export trade from Middlesbrough ports is flat and the shipments for the month are on a smaller level than those of November.

Scotland Curtails Production

Four more furnaces have been put out in Scotland and this will leave only six in blast, the smallest number in the history of the industry except on the occasion of industrial stoppages. In the first half of the present year nearly thirty furnaces were in operation. Output is also at a low point in the Furness district and is in fact the lowest since the general strike of 1926. Stocks are heavy in this district and it is feared that output may be further curtailed. Hoop mills at Barrow are fairly active but other departments of the steel trade are standing.

In the Birmingham district deliveries of Continental material, both iron and steel, are taking place but new business is decidedly scarce and merchants are doing less than for a long time. It is not always possible to obtain quotations for billets but there is practically no inquiry for prices.

In the tin plate trade of South Wales another meeting was held to endeavor to persuade works outside the pool to join and one of the largest concerns has expressed its willingness to do so. Prices are a little easier at 15s 9d ($3.82) basis and some business has been done for first quarter. Manufacturers have quoted lower prices in order to obtain the business and to give the men employment. Consumers are aware that the price of tin is lower and are therefore expecting the manufacturers of tin plates to make concessions.

Belgian Output Smaller

Brussels—Output of pig iron, steel ingots and castings in Belgium in October was less than in September. Production of furnace coke in October was 417,150 metric tons, compared with 415,650 tons in September. Comparisons follow, in metric tons:

Mon. ave.	Act. Furn.	Pig iron	Steel ingots and castings	Finished steel
1913	....	207,055	205,550	154,920
1927	....	312,620	309,040	255,185
1928	....	325,445	327,870	281,125
1929	58	341,330	344,370	296,370
1930				
Jan.	58	343,380	340,200	296,220
Feb.	57	315,320	321,480	271,430
Mar.	57	341,820	359,150	258,770
April	56	313,250	312,550	252,150
May	54	299,510	294,160	240,900
June	51	265,290	252,680	204,590
July	49	259,750	263,980	209,060
Aug.	47	246,740	244,870	206,020
Sept.	46	250,630	254,280	202,970
Oct.	43	248,550	252,340	220,810

Belgian Trade Increases

Brussels—A substantial increase in exports of pig iron and steel from Belgium and Luxemburg was noted in September.

Imports of pig iron and other iron and steel products also gained. Comparative figures follow, in metric tons:

	— Imports —		— Exports —	
Mon. ave.	Pig iron	Other iron and steel	Pig iron	Other iron and steel
1927	31,760	28,000	11,350	388,000
1928	45,910	38,000	8,240	380,000
1929	56,150	37,000	10,090	394,500
1930				
Jan.	44,274	37,200	13,551	392,000
Feb.	38,121	32,700	7,320	295,600
Mar.	42,240	29,600	9,412	403,900
April	36,504	26,200	10,624	436,400
May	34,007	28,000	10,266	355,600
June	29,287	28,400	8,410	314,500
July	31,676	23,750	7,876	318,600
Aug.	26,996	20,900	8,196	282,400
Sept.	32,823	22,200	10,014	356,500

German Steel Probe Finds Limitation of Output Only Remedy for Distress

Berlin—The government committee which for a couple of years has been investigating the situation in the German iron and steel industry has just published its report, which contains the following conclusions. Three possibilities are open to the German iron and steel industry:

(1) To keep its works operating at a high rate, and, in order to sell the production, to export part of it abroad at a loss, which would result in an almost unbearable increase in the prices to be paid by domestic consumers. This way has proved unworkable, as is shown by the strong protest of domestic consumers, just published, against high iron and steel prices.

Abandonment Seen as Remedy

(2) To cut costs of production by all possible means in order to make possible a drastic reduction of domestic steel prices.

(3) To reduce exports, and also, resulting therefrom, production, "which finally must result in the abandonment of a part of the plants, unless the domestic consumption at reduced prices can balance the orders so far received from users abroad.

Thus the result of the investigation is serious for the German iron and steel industry, as it claims that only by laying idle a part of the too much enlarged capacity can a way out of the present depression be found. Among other things, the report claims that German consumers have to pay at least 150,000,000 marks more than they should, due to the monopoly of the iron and steel masters. It is easily understood that the industry concerned strongly objects to the conclusions of the report, and a lengthy struggle may be expected to ensue.

Prices Widely Divergent

It is interesting to note that the report calculates the cost of producing merchant bars in 1927 at 111 marks, ($26.50) which since that time has scarcely changed. To-day, the domestic price for merchant bars is 137 marks, ($32.50) whereas the Germans are asking 87 marks ($20.65) for export. According to President Kloeckner, of the Kloeckner Works Co., a year ago about 50 per cent of the production was sold at home and the balance was either sold abroad, or at home with an export rebate; to-day, however, the domestic sales at high prices have declined to about 23 per cent, whereas exports and domestic sales at a rebate still total 50 per cent, which results, of course, in reducing the average price below the cost of production.

German Trade Larger

Berlin—Exports of pig iron and ferroalloys from Germany in October were greater than in September, but exports of other iron and steel products were smaller.

Imports of pig iron, ferroalloys and other iron and steel products gained over September. Comparisons follow, in metric tons:

	— Imports —		— Exports —	
Mon. ave.	Pig iron and ferro-alloys	Other iron and steel	Pig iron and ferro-alloys	Other iron and steel
1927	23,895	217,505	29,910	347,645
1928	25,535	174,250	24,585	394,575
1929	14,765	137,435	36,115	448,330
1930				
Jan.	22,004	105,127	33,153	488,245
Feb.	13,597	98,397	24,271	409,822
March	16,777	107,401	25,983	465,166
April	12,032	113,195	18,364	405,633
May	16,070	114,548	23,164	439,791
June	13,669	88,342	18,814	341,828
July	14,689	90,630	16,811	332,546
August	12,495	91,539	12,929	324,751
Sept.	14,022	79,017	12,652	355,485
Oct.	15,498	83,071	16,138	331,976

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, January 5

Export Prices f. o. b. Ship at Port of Dispatch—By Cable

	British Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
PIG IRON	£ s d		£ s d		£ s d		£ s d	
Foundry No. 3, Silicon 2.50-3.00	$15.43	3 3 6*	$12.15	2 10 0	$12.15	2 10 0	$12.15	2 10 0
Basic-bessemer	15.80	3 5 0†	11.66	2 8 0	11.66	2 8 0	13.37	2 15 0
Hematite, Phosphorus 0.02-0.05	17.01	3 10 0	.....	.....	.....	.....	17.01	3 10 0
SEMIFINISHED STEEL								
Billets	$27.34	5 12 6	$17.98	3 14 0	$17.98	3 14 0	$17.50	3 12 0
Wire rods	41.31	8 10 0	29.16	6 0 0	29.16	6 0 0	29.16	6 0 0
FINISHED STEEL								
Standard rails	$40.10	8 5 0	$31.59	6 10 0	$31.59	6 10 0	$31.59	6 10 0
Merchant bars	1.68c	7 15 0	.95c	4 6 0	.95c	4 6 0	.96c	4 7 0
Structural shapes	1.68c	7 15 0	.83c	3 15 0	.83c	3 15 0	.83c	3 15 0
Plates, ship, bridge and tank	1.79c	8 5 0	1.07c	4 17 0	1.07c	4 17 0	1.07c	4 17 0
Sheets, black, 24 gage	1.90c	8 15 0	1.83c	8 6 9	1.83c	8 6 9	1.93c	8 15 0
Sheets, galvanized, 24 gage, corrugated	2.44c	11 5 0	2.35c	10 13 9	2.35c	10 13 9	2.31c	10 10 0
Bands and strips	2.06c	9 10 0	1.02c	4 12 6	1.02c	4 12 6	.96c	4 7 0
Plain wire, base	2.06c	9 10 0	1.21c	5 10 0	1.21c	5 10 0	1.23c	5 12 0
Galvanized wire, base	3.04c	14 0 0	1.49c	6 15 0	1.49c	6 15 0	1.54c	7 0 0
Wire nails, base	2.39c	11 0 0	1.21c	5 10 0	1.21c	5 10 0	1.23c	5 12 0
Tin plate, base box 108 pounds	$ 3.89	0 16 0	.....	.....	.....	.....	$ 8.26	1 14 0

Domestic Prices at Works or Furnace—Last Reported

		Francs		Francs		Marks
Foundry No. 3 Pig Iron, Silicon 2.50-3.00	$15.43 3 3 6	$11.59	295(2)	$14.23	510	$19.76 83
Basic pig iron	15.80 3 5 0	13.56	345(1)	12.56	450	21.07 88.50
Furnace coke	2.92 0 12 0	6.60	168	5.02	180	5.10 21.40
Billets	27.34 5 12 6	19.26	490	18.55	665	27.98 117.50
Standard rails	1.79c 8 5 0	1.41c	785	1.59c	1,220	1.47c 136
Merchant bars	1.68c 7 15 0	.97c	540	1.02c	785	1.48c 137
Shapes	1.84c 8 10 0	1.12c	620	.96c	740	1.45c 134
Plates, ship, bridge and tank	1.95c 9 0 0†	1.37c	760	1.14c	875	1.65c 153
Sheets, black, 24 gage	1.90c 8 15 0	2.29c	1,270	2.41c	1,850	1.36c 126
Sheets, galvanized 24 gage, corrugated	2.44c 11 5 0	3.06c	1,700	2.73c	2,100	3.67c 340
Plain wire	2.06c 9 10 0	2.16c	1,200	2.15c	1,650	2.34c 217
Bands and Strips	2.06c 9 10 0	1.22c	680	1.43c	1,100	1.72c 159

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 12s 0d ($2.92) f. o. b. Ferromanganese £19 6s 0d ($93.80) delivered Atlantic seaboard, duty-paid. German ferromanganese £12 5s 0d ($59.54) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel. French, Belgian, Luxemburg, and German are for basic-bessemer steel.

Machinery

WITH the new year only one week old, it is too early to draw definite conclusions as to what it has in store. Three significant facts appear, however. Automobile production is being resumed. Railroad shops throughout the country are reopening. The slight improvement noted by several representative machine tool builders during December is continuing into January. While these signs are decidedly encouraging, they point toward the gradual recovery of the machine business rather than toward any immediate spurt. In the meantime, engineering developments go on apace.

New York—Inquiry for machine tool equipment shows some improvement, but buying has not developed to any extent. Large volume of replacement business is in the background, but action depends upon general resumption of business. Sales generally are confined to one or two units at a time, although the various government departments are placing tools and opening bids this week on several lists.

Bids are in on five engine lathes for the Boston navy yard, two motor-driven automatic screw machines on which a Providence, R. I., builder was low, and a motor-driven boring, drilling and milling unit on which a Cleveland interest was low with $10,280. For the five engine lathes 14 builders bid for the contract. The District of Columbia commissioners have taken bids on 21 units, including a shaper, grinder, metal shear, boring and turning mill, drill press and a 6-foot lathe. Bids went in Jan. 6 on a turret lathe for Charleston, S. C., also a drill press. For Brooklyn on the same date bids were closed on a jib crane with trolley and electric hoist, 3-tons capacity. One motor-driven radial drill with 3-foot arm for the bureau of light houses, Staten Island, and three drilling machines, two with two spindles and one with three spindles are about to be placed, bids being in. With the exception of government business there is little activity. Railroads are taking but few tools. Some export business to Russia is noted. While new unit installation is slack, the industry is more optimistic because the inquiries are heavier and there seem to be prospects of closing on some of this business. That improvement will be gradual is the opinion of most machinery builders.

Worcester, Mass.—Some inquiry is beginning to develop in grinders, a field in which a condition of inactivity has prevailed for several weeks past. Here and there some Russian business is in evidence. The navy department at Washington also is pushing its schedules for lathes and drills. Otherwise the market continues unusually quiet.

Pittsburgh—Machine tool activity is beginning to show signs of improvement following the holiday period. A fair volume of work is pending but buyers in some instances are hesitant to close, awaiting definite indications of early 1931 rate of business. Machine tool sellers are active in the development of orders for special equipment, but inquiry for standard tools still continues rather light. Few large lists are pending, most inquiry being limited to a few tools at a time. Steel companies remain fairly active as far as special equipment is concerned but little inquiry is coming from railroads.

Cleveland—Resumption of automobile manufacturing has been immediately responsible for a distinct revival in the metalworking industry in the Cleveland district this week. According to the Cleveland chamber of commerce, the local employment index shows its first upturn since May, 1930, the lowest level having been reached in November and December. Ten representative companies announce additions to their working forces amounting in all to about 1500 people. Of these companies, seven are engaged in metalworking, in most cases in the making of automotive parts.

Machine tool builders naturally are cheered by this revival, although generally they realize that it may take some time for it to arouse their business to any extent. Small tools are likely to profit first, but even this field feels no particular reaction as yet. Two of the largest machine tool companies report that December sales—small as they were—showed gratifying improvement over November, and further state that the improved level seems to be holding. One of the leading machine tool builders has just declared another substantial quarterly dividend, indicating a good cash position and faith in the future. With railroad shops throughout the country resuming operations following layoffs usually amounting to several weeks, hopes are held by manufacturers of heavy machinery that lists pending in this direction for long periods will begin to be released in the near future.

Chicago—Machine tool buyers appear to be in no hurry to revive interest held in abeyance for the turn of the year, and the market continues to drag. A number of isolated inquiries have appeared, but no lists of consequence. Several industrial buyers who have scheduled purchases for early this year are taking plenty of time for final decisions. Western railroads show some activity. Burlington has added to its radial drill inquiry with a request for bids on a double end axle lathe, and Kansas City Southern placed a heavy-duty boring mill in this district. Chicago, Great Western is expected to be definitely in the market for about one dozen items soon, having already asked for some estimates. An Aurora, Ill., industrial concern is inquiring for several tools, but may purchase used equipment. Most of the light manufacturing operations in the district that were suspended during the holidays are being resumed this week.

1930 Census Report Reveals Figures on Small Tools

Washington—The bureau of the census announces that, according to a preliminary tabulation of data collected in the census of manufactures taken in 1930, the total value at f.o.b. factory prices of machine tool accessories and small metalworking tools manufactured in the United States in 1929 amounted to $166,537,066. Of this total, $111,833,929 was contributed by attachments and fixtures, and $54,703,137 by small tools. The leading item is $44,814,512 representing the value of subpresses, punches, dies, etc.

Of the total, $134,194,194 was reported by establishments engaged primarily in the manufacture of machine tool accessories and small metalworking tools, and the remaining $32,342,872 represents the value of such accessories and tools made as secondary products by establishments engaged primarily in the manufacture of machine tools and of stamped ware, enameled ware, metal stampings, etc.

This industry, statistics for which are presented at this census for the first time, embraces establishments whose principal products are twist drills, reamers, milling cutters, taps, dies, jigs, fixtures and special tools.

Mill Products

Base price cents per pound f.o.b. mill, except otherwise specified. Copper and brass product prices based on 10.50c, Conn., for copper

Sheets	
Yellow brass (high)	17.37½
Copper, hot rolled	20.25
Lead, full sheets (cut ½c more)	9.00
Zinc sheet (100-lb. base)	9.50
Tubes and Pipes	
Seamless yellow brass (high)	22.25
Seamless copper	22.62½
Rods	
Yellow brass (high, full turnings)	15.62½
Naval brass	17.75
Anodes	
Copper, untrimmed	17.75
Wire	
Yellow brass (high)	17.87½

Old Metals

Dealers' buying prices, cents lb.

Heavy Red Brass	
New York	7.25 to 7.50
Chicago	6.25 to 6.50
Cleveland	7.50 to 8.00
St. Louis	**7.25 to 7.50**
Heavy Yellow Brass	
New York	4.75 to 5.00
Heavy Copper and Wire	
New York	8.00 to 8.25
Boston	7.75 to 8.00
Chicago	7.25 to 7.50
Cleveland	7.50 to 8.00
St. Louis	**7.00 to 7.50**
Red Brass Borings	
New York	6.75 to 7.00
Yellow Brass Tubing	
Cleveland	4.50 to 5.00
Light Copper	
New York	7.00 to 7.25
Chicago	6.00 to 6.50
Cleveland	6.50 to 7.00
St. Louis	**6.75**
Light Brass	
Boston	3.75 to 4.00
Chicago	4.00 to 4.25
Cleveland	3.50 to 4.00
St. Louis	**4.00 to 4.25**
Zinc	
New York	**2.00 to 2.25**
Cleveland	2.00 to 2.25
St. Louis	**2.00**
Aluminum	
Clippings, soft, Cleveland	12.00 to 13.00
Clippings, hard, Cleveland	**8.00 to 9.50**
Borings, Cleveland	**5.00 to 5.50**
Mixed cast, Cleveland	6.00 to 6.25
Mixed cast, Boston	5.00 to 5.50
Mixed cast, St. Louis	4.25

Secondary Metals

Remelt aluminum No. 12	12.50
Brass ingots, 85-5-5-5	10 25

Metals

Light Demand in Most Grades —Strength and Weakness Nearly Balance Market

New York—Demand is light for nearly all nonferrous metals but indications are seen of larger shipments by brass and copper mills at an early date. Whether this improvement will extend beyond the seasonal recovery from the usual restriction of shipments at the end of a year is uncertain.

Price strength in some metals is balanced by weakness in others. While tin was recovering to 27.00c during the past week, lead was cut to 5.00c, New York. Copper, zinc and aluminum have shown practically no change.

Copper—Domestic demand continues extremely small, but export buying has been moderate the past few days after a period of good daily tonnages. Nearly all producers other than custom smelters remain out of the market, so that moderate export business, at least for the time being, seems to be sufficient to maintain the custom smelter price. After a delay in which there were no officially published brass and copper mill prices, some of the leading mills have sent out their printed lists to customers.

Zinc—In the absence of demand, the price on immediate shipment has slipped off a little so that some metal has been obtainable in the past few days at 4.10c, East St. Louis. Most smelters quote 4.12½c, with futures at 4.15c to 4.20c. Stocks of slab zinc were cut 1563 tons during December for the first time in a year and a half, according to the American Zinc Institute Inc.

Tin—Faith in the new plan for government control of tin in several producing countries has offset the weakness of December statistics. It is believed by many traders here that the governments of the Federated Malay states, the Dutch East Indies and Nigeria will agree to restrict exports. Bolivia has indicated its readiness to join the program. Heretofore, regulation has been a matter of individual producers agreeing on curtailment of production. December showed an increase of 1687 tons in the world visible supply and the increase would have been larger had not deliveries in United States been nearly 7500 tons.

Lead—The cut in lead prices by ten points in New York and 15 points in St. Louis came after a period of unusual stability. Lead is lower now than last year, but prices then were not cut so drastically as in other metals.

Aluminum—New business is light and prices of new metal are unchanged but scrap is weak.—*Daily Metal Trade.*

Coke By-Products Quiet; Prices Slightly easier

New York—Demand for light oil distillates is dull. Little advance business is being taken, although stocks are not mounting seriously, due to curtailed output. Prices are holding fairly steady, but some instances of shading are reported on attractive spot business. Benzol shipments are light. Toluol is inactive. Xylol and solvent naphtha are steady with only a fair demand. Phenol is slightly more active at unchanged prices. Naphthalene contracting progresses, comparing well with last year. Sulphate of ammonia buying is steady, but not active.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.21
90 per cent benzol	0.21
Toluol	0.30
Solvent naphtha	0.25
Commercial xylol	0.25
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Delivered	
Sulphate of ammonia	$1.95

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
Dec. 31	10.50	10.62½	10.25	26.12½	26.37½	5.10	4.95	4.12½	22.90	7.12½	35.00
Jan. 2	10.50	10.62½	10.25	26.62½	27.00	5.10	4.95	4.12½	22.90	7.15	35.00
Jan. 3	10.50	10.62½	10.25	26.87½	27.25	5.10	4.95	4.10	22.90	7.15	35.00
Jan. 5	10.50	10.62½	10.25	27.00	27.37½	5.00	4.80	4.10	22.90	7.25	35.00
Jan. 6	10.50	10.62½	10.25	26.70	27.00	5.00	4.80	4.10	22.90	7.30	35.00

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought iron pipe, Pittsburgh base.

BUTT WELD

Steel			Iron		
In.	Blk.	Gal.	In.	Blk	Gal.
½	58	44½	½	23	5
¾	62	50½	¾	28	11
1—3	64	52½	1 and 1¼	31	15
			1½ and 2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7 and 8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

½	55	44½	¼ & ⅜	+13	+48
¾	60	49½	½	23	7
1—1½	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7 and 8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, Lap Welded Steel		f.o.b. Pittsburgh Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¼—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES
COLD DRAWN

1	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill

Random lengths over 5 ft. 55%
Selected lengths, 1 to 18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir.....$37.00 to 38.00
Four-inch, Birmingham..... 41.00 to 42.00
Four-inch, Chicago ..... 49.20 to 50.20
Six to 24-inch, Chicago..... 45.20 to 46.20
Six-inch and over, N. Y..... 38.50 to 40.50
Four-inch, New York ..... 41.50 to 42.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.15c
Chattanooga..	3.10c
Chicago	2.90c
Cincinnati	3.15c
Cleveland	2.85c
Detroit	3.00c
Houston	3.00c
Los Ang.	3.40c
New York‡(d)	3.10c
Philadelphia..	2.60c
Pittsburgh	2.75c
Portland	3.15c
San Frans. ..	3.40c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.00c
Tulsa	3.65c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.15c
Chattanooga..	3.10c
Chicago	3.00c
Cincinnati	3.15c
Detroit	3.00c
New York‡(d)	3.10c
Philadelphia..	2.60c
St. Louis	3.15c
Tulsa	3.65c

REINFORC. BARS

Baltimore....2.50c-	3.31c
Boston	3.265c
Buffalo	2.95c
Chattanooga..	3.10c
Cincinnati	3.15c
Cleveland ..2.25c-	2.44c
Detroit	3.00c
Houston	3.00c
Los Ang. cl....	2.40c
Los Ang. lcl..	2.70c
New York..2.65c-	3.10c
Phila. 2.40c-	3.00c
Pittsburgh	2.75c
San Fran. cl.	2.30c
San Fran. lcl.	2.60c
Seattle	3.15c
St. Louis	3.15c
Tulsa	3.65c
Young. 2.30c-	2.60c

SHAPES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga..	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los Ang.	3.40c
New York(d)	3.10c
Philadelphia..	2.50c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.75c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga..	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles..	3.40c
New York(d)	3.30c
Philadelphia..	2.50c
Phila. floor....	5.10c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	2.75c

NO. 10 BLUE

Baltimore	3.50c
Bost. 3/16-in.	9.915c
Buffalo	3.50c
Chattanooga..	3.60c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.10c
Detroit	3.35c
Houston	3.90c
Los Ang.	3.95c
N. Y. (d)....3.20c-	3.40c
Portland	4.00c
Phila.*†	3.05c
Pitts.**	2.75c
San Fran.	3.80c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.95c

NO. 24 BLACK

Balt.*†	3.75c
Boston	4.70c
Buffalo	4.20c
Chicago	3.80c
Cincinnati	4.05c
Clev.***	3.75c
Detroit	3.75c
Los Ang.	4.70c
New York..3.55c-	3.65c
Phila.*†	3.60c
Pitts.**	3.40c
Portland	4.50c
San Fran.	4.35c
Seattle	4.50c
St. Louis	4.05c
St. Paul	3.545c
Tulsa	4.10c

NO. 24 GAL. SHEETS

Balt.*†	4.25c
Boston	5.45c
Buffalo 4.40c-	4.60c
Chicago (local del.)	4.35c
Chicago (outside)	4.35c-4.60c
Cincinnati	4.90c
Cleveland***..	4.35c
Detroit	4.25c
Houston	5.40c
Los Ang.	5.10c
New York....4.10c-	4.25c
Phila.*†	4.15c
Pitts.**	4.00c
Portland	5.00c
San Fran.	5.00c
Seattle	5.00c
St. Louis	4.60c
St. Paul	4.23c
Tulsa 4.60c-	4.75c

BANDS

Baltimore	3.50c
Boston 4.015c-	5.00c
Buffalo	3.5[illegible]c
Chattanooga..	3.30c
Chicago	3.10c
Cincinnati	3.35c
Cleveland	3.10c
Det. 3/16-in. & lighter....	3.30c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia..	2.90c
Pittsburgh	3.10c
Portland	3.50c
San Fran.	3.75c
Seattle	4.15c
St. Paul	3.75c
Tulsa	3.85c

HOOPS

Baltimore	3.50c
Boston 5.50c-	6.00c
Buffalo	3.90c
Chicago	3.65c
Cincinnati	3.90c
Cleveland	3.65c
Det. No. 14 & lighter ..	3.80c
New York	3.75c
Philadelphia..	3.15c
Pittsburgh	4.10c
Seattle	5.15c
St. Paul	3.70c

COLD FIN. STEEL
Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.85c
Chicago	3.35c
Cincinnati	3.80c
Cleveland	3.40c
Detroit	3.65c
Los Ang. (a)	4.50c
New York	3.50c
Philadelphia*	3.40c
Pittsburgh	3.35c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)....	4.75c
St. Paul (a)..	3.85c
St. Louis	3.60c
Tulsa	4.75c

Flats and squares 5.1c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)..	6.15c
Cincinnati	6.10c
Clev. (b)	5.95c
Detroit	5.40c
Phila. (c).....	4.85c
New York	5.05c

(b) Net base straightening, cutting, boxing 1 ton or more. (c) Plus mill, size and quantity extras. (d) Minus quant. diff. ‡Domestic bars. *Plus quantity extras. **Less than 25 sheets. *†50 or more bundles. ***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

BRIDGEPORT, CONN.—Industrial Sheet Metal Workers is a new concern here, manufacturing industrial dryers.

BRIDGEPORT, CONN. — Lindstrom Tool & Toy Co., Silliman street, has awarded contract for a 2-story plant, 50 x 150 feet. Cost is estimated at $50,000.

WATERBURY, CONN.—E. Perrault, 510 South Main street, is receiving bids for a one and 2-story shop, 43 x 50 feet.

BOSTON—Thompson Wire Co. Inc., 31 Mildred street, advises through G. M. Thompson that its Mattapan plant addition is 54 x 135 feet and is to be used for annealing. Present equipment is to be revamped. (Noted Dec. 25.)

BOSTON—Bureau of yards and docks, navy department, Washington, plans to build a steel storage unit and install a crane for the marine railway at Charlestown navy yard. Plans are private. Cost of the entire project is estimated at $2,000,000.

BOSTON—New England Steel Tank Co., 365 D street, whose incorporation recently was noted, advises through Charles F. Koopman Jr., president, that the company has leased a plant for the manufacture of tanks, smoke stacks, smoke flues and general heavy plate work. Needs will include a set of plate bending rolls about 10 inches long, combination punch and shear and hand hoists. (Noted Dec. 18.)

SALEM, MASS.—Salem Bronze & Aluminum Co. has been organized by J. T. Gene and James Laurie, to conduct a foundry business.

SPRINGFIELD, MASS. — Granville Brothers Aircraft Inc., Zantford Granville president, proposes to erect a plant for the manufacture of airplanes.

WELLESLEY, MASS.—Water and municipal light commissioners, Taylor block, are receiving bids for extensions to the municipal light plant. Plans are private. Cost is estmated at $40,000.

New York

BEDFORD HILLS—Department of correction, state office building, Albany, N. Y., has preliminary plans for increasing boiler capacity, construction of power plant, and addition of stokers here.

BUFFALO—Curtiss Aeroplane & Motor Co., Garden City, L. I., New York, will remove its plant to a location here. G. A. Luburg is assistant general engineer.

BUFFALO—Peerless Metal Products Co. has been incorporated with $10,000 capital by N. H. Staley, Genesee building, to make metal stampings.

NEW YORK—Arcade Metal Products Inc. has been incorporated with $20,000 capital by L. Nadel, 51 Chambers street.

NEW YORK—City board of transportation has authorized construction of subway repair and inspection shops. Cost, with equipment, is estimated at $1,000,000.

OSWEGO—Ontario Omnibus Corp. has leased the former stack shop of the Ames Iron Works on East Cayuga street and will convert it into a repair shop.

Pennsylvania

DONORA—Unit of American Steel & Wire Co., containing pipe shop and millwright department recently was virtually destroyed and power plant damaged by fire. Loss is estimated at $50,000.

OIL CITY—National Transit Pump & Machine Co. advises through L. C. Longaker, treasurer, that contracts awarded to the L. O. Bouquin Co. are for construction of seven units, the largest being 160 x 260 feet. Cost is estimated at $500,000. (Noted Dec. 25.)

PHILADELPHIA—Philadelphia Metal Drying Form Co., 125 North Fifth street, has acquired manufacturing space at Eighth street and Columbia avenue.

PHILADELPHIA—Simonds, Ward & White, Dayton, O., affiliated with Simonds Saw & Steel Co., Fitchburg, Mass., will rebuild its abrasive plant here. Unit will be reconstructed according to plans similar to those of the Simonds saw plant now being constructed at Fitchburg.

PHILADELPHIA — Kellett Aircraft Corp., W. Wallace Kellett president, Atlantic building, plans to go into production of Pitcairn-Cierva autogiros in the spring. Built-up members made of rolled stainless steel strips, spot-welded, are to be used in fabrication. W. Laurence LePage is chief engineer.

PITTSBURGH—York Ice Machine Corp., 2400 Carson street, has awarded contract to Walker-Curley Co., Sharpsburg, Pa., for plant alterations. Estimated cost, $3600.

TITUSVILLE—Titusville Iron Works Co., operated by the Struthers-Wells-Titusville Corp., Warren, Pa., manufacturer of boilers, tanks and oil field supplies, has tentative plans for the construction of a plant addition to cost $60,000. Unit is to be completed early in 1931.

New Jersey

CAMDEN—Darby Steel Products has been incorporated with $100,000 capital by Raymond L. Siris, to make steel furniture.

EAST ORANGE—Andrew A. Bato, mechanical engineer, 339 North Grove street, advises that he is in the market for a steam boiler, 400 horsepower, 150 pounds pressure, headroom 19 feet or less, another boiler of 250 pounds pressure, an engine generator, 150 to 200 kilowatts, direct current, 240 volts, and a turbine generator, same rating, for 250 pounds pressure.

NEWARK—Harris Wire Corp. has been incorporated with $100,000 and 5000 common shares by Dusenberry & Coffin, to manufacture wire.

NEWARK—General Auto Body Service Inc. has been incorporated with $250,000 and 2500 common shares by Walter D. Van Riper, 763 Broad street, to manufacture automobile bodies.

PLAINFIELD—Ritterbush & Co. Inc. has been incorporated with $50,000 capital by George W. V. Moy, to deal in machinery.

SECAUCUS—Curtiss-Wright Airports Corp., New York, is reported to plan an airport here, with seaplane base and aircraft assembling plant. Cost is reported at $1,000,000.

Ohio

CLEVELAND—Ohio Weighing Machine Co. has been incorporated with $25,000 capital by Oscar S. Cramer, Engineers building.

CLEVELAND—Lester Die & Machine Co. Inc. has been incorporated with 250 common shares by Nathan Lester, 12600 Berea road.

CLEVELAND—Universal Specialties Corp., 1900 West Twenty-fifth street, advises through Paul V. Jones that the company will move to larger quarters in 30 to 60 days. (Noted Dec. 18.)

CLEVELAND—C. F. LaGanke Co. Inc., 118 St. Clair avenue northeast, A. E. Shepard manager, will add equipment within the next few months in order to handle a larger variety of tool work.

COLUMBUS—Plant of the Automatic Reclosing Circuit Breaker Co., 1304 Indianola avenue, recently was damaged by fire, with loss estimated at $6000.

GALION—Galion Iron Works, Y. T. Leftwich manager, proposes to open a branch plant in eastern Canada in the near future.

GALION—Gledhill Road Machinery Co. has been incorporated with 3000 no par shares by Carl J. Gugler, 203 Wyandot building. Company will manufacture road machinery designed by E. C. Gledhill.

JACKSON—City council is consid-

ering replacement of the municipal light plant, which recently was practically destroyed by fire. Generating and other equipment was destroyed, with loss estimated at $20,000.

SIDNEY—Sidney Machine Tool Co., machine tool manufacturer, has acquired the milling machine business of Kempsmith Mfg. Co., of Milwaukee, manufacturer of milling machines, and is transferring operations to the local plant. A. C. Getz is general manager of the Sidney company.

TOLEDO—Mutual Heating & Mfg. Co. will expand its central heating system and construct a power plant, 100 x 400 feet. Plans are by Mills, Rhines, Bellman & Nordhoff. Boilers, pumps and other equipment will be required.

TOLEDO — Libby Glass Co. has awarded contract to the H. K. Ferguson Co., Hanna building, Cleveland, for plant additions which will increase capacity approximately 100 per cent. Units will include manufacturing structures, warehouse, engine room, machine shop, boiler house and other buildings, to be ready for operation about March 15. Cost, with equipment, is estimated at $600,000.

TOLEDO—Robert J. Eustace, industrial commissioner of the chamber of commerce, reports that additional plant expansions announced for 1931 will bring the total expenditure in the city to $1,250,000, supplementing announcements noted Dec. 4. Logangear Products Co., Westwood avenue, is installing machinery and will add more; Harrison Boat Works, 3828 Summit street, will increase facilities; Industrial Heat Treating Co., 532 State street, plans to build a new plant.

Indiana

FT. WAYNE—Wayne Welding Co. Inc., 517 East Wayne street, has been incorporated by Thomas R. Williams and G. O. McClure, and will operate a welding shop.

MT. VERNON—Keck Gonnerman Co. has been incorporated with $200,000 capital by John and Louis D. Keck and William Gonnerman, to operate foundries, machine and steel shops.

Michigan

ANN ARBOR—Precision Parts Co. has been incorporated with $10,000 capital by Charles A. Verschoor, to manufacture and deal in automotive parts.

DETROIT—Rex Tool & Die Co., 5680 Twelfth street, is reported to be inquiring for a shaper.

DETROIT—F. J. Lamb Co., Wright and Iron streets, is in the market for one No. 14½ Toledo Horning press and 36 to 42-inch power shear for 14-gage stock.

DETROIT—Department of street railways, St. Jean and Shoemaker avenues, is inquiring for a portable cylinder reborer and grinder and a turning and grinding machine, with accessory equipment.

DETROIT — Mueller Streamline Copper Pipe & Fittings Corp. has been incorporated with 5000 no par shares by Oscar B. Mueller, 1925 Lapeer avenue, to manufacture and sell machinery, appliances, tools, fittings and rods.

DETROIT—Chevrolet Motor Co., General Motors building, 420 Milwaukee avenue west, advises through M. E. Coyle, vice president and general auditor, that branches of the commercial body division now being opened at various points will limit their operations to shipping bodies to dealers or mounting bodies on chassis. Fifty-two unit branches are being established.

FLINT—Plant of the Associated Die & Tool Co., 601 West Water street, recently was damaged by fire. L. H. Gibney, manager, estimates loss at $5000, confined principally to the office.

SAGINAW—Austin Co., engineers and builders, 16112 Euclid avenue, Cleveland, advise that Malleable Iron division of General Motors Corp. will manufacture malleable castings in the new plant unit recently noted as planned. Structure will be 68 x 512 feet. D. O. Thomas is manager of the division. (Noted Dec. 25.)

Illinois

CHICAGO—Rotary Machine Co., 3825 West Lake street, has been incorporated with $25,000 capital by White & Hauxhurst, 1 LaSalle street, to deal in machinery and equipment.

CHICAGO—Wilson & Bennett Mfg. Co., manufacturer of steel barrels and containers, 6532 South Menard avenue, is remodeling its plant and adding a 3-story office and garage building. Alfred E. Stroebel, 192 North Clark street, is architect.

CHICAGO—Midland Specialties Co., 536 West Twenty-fifth street, has awarded contract to the Austin Co., 510 North Dearborn street, for the design and construction of a 1-story plant, 84 x 130 feet, to be erected on South Richmond street. Unit will be used for the manufacture of oil measures and funnels. Cost is estimated at $50,000.

CRYSTAL LAKE—Public Service Co. of Northern Illinois, 72 West Adams street, Chicago, is building service headquarters here at a cost of about $125,000. Structure is to cover 125,000 square feet. General contract has been awarded to C. E. Billings, Barrington, Ill.

ELSAH—Group of buildings, including a power house, will be erected here by the Principia school, 5457 Page boulevard, St. Louis, at a total cost of about $3,500,000. B. Maybeck, Berkeley, Calif., is architect.

Southern States

WILMINGTON, DEL. — Progressive Manufacturers Inc. has been incorporated with 2000 common shares by Franklin L. Mettler to deal in machines and tools.

WASHINGTON—J. E. Hurley, 1219 Ohio avenue northwest, proposes to build a 1-story machine shop, 75 x 93 feet, at a cost of about $25,000. G. T. Santmyers, 1418 I street, is architect.

WASHINGTON—Bureau of supplies and accounts, navy department, will receive bids Jan. 13 for equipment for the naval station at Cavite, P. I., including one rod and dowel machine, one four-sided outside molder, motor-driven jig saw, drilling and tapping machine, and two vertical drill presses. Bids will be received Jan. 20 for a motor-driven automatic cut-off saw and a hand planer and jointer.

JACKSONVILLE, FLA.—City commission plans to construct a power substation, to cost, equipped, $45,000.

MIAMI, FLA. — Safety Aircraft Corp., box 109, advises through Samuel E. Taylor that new hangar unit to be built at All-American airport is to be 80 x 100 feet. Machinery and equipment requirements have not been decided upon. (Noted Dec. 25.)

NEW ORLEANS—Service Galvanizing Co. has been incorporated with $10,000 capital by Charles A. Anderson, 8430 Apricot street, to operate a hot-dip galvanizing plant.

MARYVILLE, TENN. — Superior Sub-Soiler Mfg. Co. has been organized with W. G. Wagner as president. Company will market a plow attachment for sub-soil plowing, to be manufactured by W. O. Farmer Mfg. Co.

NORFOLK, VA.—Plant of the Norfolk Iron and Wire Works Co., 136 Wilson avenue, recently was damaged by fire.

NORFOLK, VA.—Bureau of supplies and accounts, navy department, Washington, will receive bids Jan. 20 for a motor generator set to be delivered to the navy yard here.

Missouri

KANSAS CITY—Nuball Co. has been organized by Lee S. Thomson, 5964 Blue Hills road, to make machines for painting golf balls.

KANSAS CITY—National Air Transport, 5936 South Cicero avenue, Chicago, is considering erection of a hangar and shop unit at the municipal airport here. Estimated cost, $70,000.

ST. LOUIS—Teuscher Pulley & Belting Co., 801 North Second street, is inquiring for a hammer mill.

ST. LOUIS—Sun Electric Mfg. Co. has been incorporated with $25,000 capital by Thomas W. Carlos, 3809

Filmore street, to manufacture electrical machines.

Arkansas

LITTLE ROCK—City, P. L. Robinson mayor, city hall, has authorized through its airport commission extensions and improvements to the municipal airport. Hangars and shops will be built. E. E. Stansberry is engineer. Cost of the entire project is estimated at $200,000.

Oklahoma

OKLAHOMA CITY—Fremont Foundry & Valve Works has been incorporated with $150,000 capital by R. B. Fremont, 1340 West Fifth street, to manufacture oil field specialties.

Texas

BIG SPRING—Southern Air Fast Express will increase shop facilities here, at a cost of about $4000.

DALLAS—National Air Transport Inc., 420 Lexington avenue, New York, is planning construction of a hangar unit near here, with repair facilities.

HOUSTON—Caldwell Welding & Machine Works, Cecil Caldwell manager, has leased a building at 1504 Caroline street for a machine shop.

TEMPLE—Acme Engineering Co. has been incorporated with $5000 capital by Donald Reynolds to operate a machine shop and engineering service.

Wisconsin

BALDWIN—Plant of the Western Cable & Light Co. recently was damaged by fire. Loss is estimated at $10,000.

KEWAUNEE—Frank Hamachek Machine Co., recently noted as planning plant extensions, advises through Frank Hamachek Jr. that preliminary plans are being prepared for a 2-story machine shop, 60 x 140 feet, a foundry 60 x 80 feet, and a central heating plant, to replace a portion of present facilities. Construction will start in the spring. Company manufactures pea viners and pea hulling machinery. (Noted Dec. 18.)

MILWAUKEE—Municipal Foundries Inc. will erect an addition at 652 Seventy-seventh avenue, in West Allis, to be equipped as a testing, cleaning and dipping room. Leroy G. Zimmermann is president. Cost is estimated at $30,000.

NEENAH—City, H. G. Zemlock clerk, will receive bids for the construction of a tower and tank with capacity of 500,000 gallons, to be erected at the municipal pumping plant.

RACINE—Modine Mfg. Co., manufacturer of automobile radiators and unit heaters, is taking bids for the construction of a 4-story plant addition, 80 x 111 feet, to cost $75,000 with equipment. (Noted Nov. 27.)

Kansas

KANSAS CITY — Sonken-Galamba Corp., 64 North Second street, advises through W. C. Berry that the company is in the market for two hydroturbines, 200 to 400 kilowatts, to operate on 40 or 50-foot head, and two hydroturbines, 200 to 400 kilowatts, to operate on 10 to 12-foot head.

Idaho

IDAHO FALLS—City proposes to construct a power project on the Snake river, at a cost of $2,000,000. Two power houses generating 19,000 horsepower are involved in the plans.

Arizona

DOUGLAS—International airport is building a hangar unit, 100 x 100 feet.

TUCSON—Southern Air Fast Express will erect a hangar unit at the municipal airport.

Pacific Coast

ALHAMBRA, CALIF.—Reliance Iron Works, 1000 South Meridian street, is building a 60-foot extension to its foundry.

FRUITVALE, CALIF.—Oliver United Filters Co., Fourth and Madison streets, Oakland, Calif., will receive bids for the construction of a plant to be erected here for the manufacture of filtering equipment and mining machinery. Approximate cost, $400,000. Reid & Corlett, Oakland Bank of Savings building, Oakland, are architects.

LONG BEACH, CALIF.—Ford Motor Co., Fordson, Mich., is having plans prepared for a main plant unit here, to be erected at a cost of $350,000. A. Kahn Inc., 1004 Marquette building, Detroit, is architect.

LOS ANGELES—Eggert & Peterson, 207 North Front street, propeller manufacturers, have a building permit for a shop building.

LOS ANGELES—Los Angeles school district is having plans prepared for a 2 and 3-story school, to be erected at a cost of about $400,000. A shop is to be included. Austin & Ashley, Chamber of Commerce building, are architects.

LOS ANGELES—Benedict & Co. Inc., affiliated with Starr Piano Co., Richmond, Ind., will acquire a site and erect a new plant for the manufacture of electric refrigerators. Total expenditure will amount to approximately $250,000.

MARE ISLAND, CALIF.—Bureau of supplies and accounts, navy department, Washington, will receive bids Jan. 13 for delivery to the supply officer at the navy yard here, for four direct motor-driven portable hand planers and jointers. Bids will be received Jan. 20 for two vertical milling machines, one power press, one universal milling machine, four 16-inch universal brass turret lathes, one angle rolling, forming and curving machine, one 19-inch universal brass turret lathe and one vertical shaper.

OAKLAND, CALIF.—R. C. Hoyt will build a 1-story machine shop at East Tenth and High streets. Unit will be 40 x 120 feet. Contract is held by F. C. Stolte, 3455 Laguna street.

OAKLAND, CALIF.—Semco Electric Mfg. Co., J. M. Zarwell manager, has leased 11,000 square feet of floor space at 329 Jefferson street, for the manufacture of electric panel boards.

OAKLAND, CALIF.—Chrome Alloys Mfg. Co., Dennison and King streets, advises through J. C. Rodger, manager, that the company at present is conducting a foundry to supply a noncorrosive nickel-chrome alloy called Krom-Aloy and it eventually will confine production to ingots. Present floor space of 2400 square feet can be expanded greatly. H. McFadgen is shop manager. (Noted Dec. 11.)

SAN DIEGO, CALIF.—Bureau of supplies and accounts, navy department, Washington, will receive bids Jan. 13 for one hardening furnace and equipment, for delivery to the naval air station here.

SOUTHGATE, CALIF. — Service Equipment Co., 8459 South Dearborn street, has awarded contract for a plant addition to Arthur S. Barnes Co., 601 Title Insurance building, Los Angeles.

TURLOCK, CALIF. — City, J. Brown superintendent of waterworks, proposes to construct an auxiliary pumping station.

BAKER, OREG.—City council, J. J. Heilner chairman of the airport committee, is having preliminary plans prepared for a 60 x 80-foot hangar to be erected at municipal airport.

BREMERTON, WASH.—Bureau of supplies and accounts, navy department, Washington, will receive bids Jan. 20 for a milling machine with attachments, for delivery to the Puget Sound navy yard near here. Bids will be received Jan. 13 for an automatic knife grinder.

SEATTLE—South Seattle Foundry Co., 3901 Ninth avenue south, has awarded contract to the Arnold Construction Co. for two additions, 42 x 45 feet and 21 x 38 feet.

SPOKANE, WASH.—K. B. Tool Co. has been incorporated with $50,000 capital by Glenn L. Fish, attorney, for the manufacture of jacks and mechanical devices.

Dominion of Canada

EDSON, ALTA. — Calgary Power Co., Calgary, Alta., will start preliminary operations on the Athabaska

river near here for the construction of a power project. Total cost will reach approximately $5,000,000.

WINNIPEG, MAN.—Winnipeg Bridge Co. is building a shop and warehouse on Grandon street, in St. Boniface, a suburb.

CALEDONIA, ONT. — City council plans to purchase pumps and other equipment for a proposed waterworks system. Cost is estimated at $60,000.

GUELPH, ONT.—Federal Wire & Cable Co. Ltd. has been incorporated with $50,000 and 10,000 no par shares by Angus Dunbar, to manufacture and deal in wire and cables.

KITCHENER, ONT.—Aeronautical Corp. of America, Lunken airport, Cincinnati, is reported to be considering erection of a plant here through a subsidiary company, for the manufacture of airplanes and motors.

OSHAWA, ONT.—Oshawa Industrial Foundation Co. may build a plant to be leased by the Vitreous Corp. Ltd., recently incorporated with $175,000 capital for the manufacture of products with a porcelain enamel finish.

SARNIA, ONT.—Dominion Alloy Steel Corp. Ltd., Metropolitan building, Toronto, Ont., will add facilities here for the manufacture of steel sheets from imported bars.

TORONTO, ONT.—Guide Motor Mfg. Co. Ltd., 105 Sherbourne street, proposes to erect a plant addition in the near future.

TORONTO, ONT.—Deslauriers Steel Moulds Ltd. has been incorporated with $50,000 capital by George H. Lovatt, 22 Beaufort road, to deal in metal molds, fabricated steel and other metals.

TORONTO, ONT.—H. S. Howland & Sons Co. Ltd., 138 Front street west, will construct a 3-story warehouse at an estimated cost of $175,000. Langley & Howland, 146 King street west, are architects.

TORONTO, ONT.—Superior Zinc Corp. of Canada Ltd. has been incorporated with 40,000 no par shares by Maxwell C. Purvis, 67 Yonge street, to carry on the business of founder, smelter and refiner of metals.

TORONTO, ONT. — Curtis Lighting of Canada Ltd., recently incorporated subsidiary of Curtis Lighting Inc., 1119 West Jackson boulevard, Chicago, has leased 11,000 square feet of floor space at 260 Richmond street west for the manufacture of lighting fixtures. Arthur L. Chase is in charge of production.

TORONTO, ONT.—Gilbert & Barker Co. of America, Cold Springs avenue, Springfield, Mass., manufacturer of oil and gasoline pumps and oil burners, subsidiary of Standard Oil Co. of New Jersey, has leased, through a Canadian subsidiary of the same name, 20,000 square feet of floor space and machinery is being installed.

WINDSOR, ONT.—Fleetway Motors Ltd., recently noted as incorporated for the manufacture of vehicles, is reported to plan the construction of a plant. (Noted Dec. 25.)

MONTREAL, QUE.—Concrete Steel Products of Canada Ltd. has been incorporated with 10,000 no par shares by John D. Kearney, 104 Elmer street, to carry on the business of iron master, steel converter, engineer and iron and brass founder.

MONTREAL, QUE.—S. Ouimet, engineer, 706 Rue Saint-Gabriel, advises that the Montreal Underground Terminal Co. is in the process of organization, with proposed capital of $100,000,000. Operations would include tramways, grain elevators and warehouses. (Noted Dec. 18.)

New Trade Publications

LUBRICATION—The current publication of the Texas Co., New York, is devoted to gear lubrication in the rubber industry.

SPECIAL IRON—Dodge Mfg. Co. Ltd., Toronto, Ont., has issued a bulletin describing qualities and characteristics of its special sorbitic iron for uses where high resistance is required.

VALVES—Edward Valve & Mfg. Co., East Chicago, Ind., has prepared a circular outlining its care in production of valves for high temperature use and presents a list of users whose requirements are high.

ELECTRICAL EQUIPMENT—General Electric Co., Schenectady, N. Y., has issued a number of bulletins, as follows: Photoelectric relay; phase protective panels; fractional horsepower motors; squirrel-cage induction motors; steam turbines; mechanical-drive turbines; oil circuit breakers.

MICRO-INDICATOR—A new micro-indicator and a jig borer are featured in current bulletins by the R. Y. Ferner Co., Investment building, Washington, representative in the United States for Societe Genevoise, Geneva, Switzerland. Each is described in detail and well illustrated.

DEEP WELL PUMPS—Three types of its deep well pumps are presented in a bulletin by the Worthington Pump & Machinery Corp., Harrison, N. J. The publication supersedes a previous issue, bringing it to date. Diagrams show construction and principle of operation and illustrations indicate a wide variety of uses.

MOTORS—Various types of small power motors are covered in circular 1883 by Westinghouse Electric & Mfg. East Springfield, Mass. The text describes motors and illustrations show construction details, appearance, and applications. A starting switch for the motors also is described.

STEAM ENGINES—Vertical steam engines for stationary and marine use, enclosed, self-oiling, with piston valve, single and twin cylinder are described in bulletin No. 304 of the Troy Engine & Machine Co., Troy, Pa. Complete data are given, with illustrations of details of engine construction, various types of engines and typical installations. In bulletin 602 the same company describes its bracket and engine types of generators for direct and alternating current.

VARIABLE SPEED CONTROL—A handbook covering the subject of variable speed control has been issued by the Reeves Pulley Co., Columbus, Ind. It covers specific requirements for speed control, engineering data, descriptions of new designs of Reeves variable speed transmissions, service manual covering installation and maintenance and a service record for listing transmissions in use.

SMALL DWELLINGS—Better business bureau of St. Louis, Julius Seidel, chairman of the construction industries division, has compiled a set of 27 specifications for various steps in the erection of a complete dwelling and has published them as good practice specifications for small dwellings. While designed for local use it offers a model for other cities, the fundamentals being applicable in any city.

SPEED REDUCERS — Foote Bros. Gear & Machine Co., 111 North Canal street, Chicago, has in preparation a new data book and catalog on its line of worm gear speed reducers. It will cover evolution of the worm gear, design, materials, manufacturing methods and selection of types. Included are data tables, curves, formulas, working problems and illustrations.

PUMPS—Nonclogging pumps, heavy duty, screenless, enclosed shaft types, are described in bulletin 128 by the Chicago Pump Co., 2336 Wolfram street, Chicago. This bulletin is supplementary to another recent publication on the open-shaft type, No. 126. Single and duplex types are shown, architects' and consulting engineers' specifications are presented and tables give capacities, heads and horsepowers.

SPEED REDUCERS — Worm gear speed reducers manufactured by the W. A. Jones Foundry & Machine Co., 4401 Roosevelt road, Chicago, are described in bulletin No. 49. Description, illustrations, data tables and details of parts make it a complete presentation. These reducers are for small electric motor drive, capacities to 7 horsepower with ratios from 5-1 to 50-1. They supplement the heavy-duty reducers of this company.